

EPA Region 5 Records Ctr.



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FIVE-YEAR REVIEW REPORT

**First Five-Year Review Report
for
Ritari Post and Pole Superfund Site
Sebeka
Wadena County, Minnesota**

September, 2003**PREPARED BY:**

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9/29/03

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List of Acronyms

ARAR	Applicable or Relevant and Appropriate Requirement
Bay West	Bay West, Incorporated
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
Delta	Delta Environmental Consultants, Incorporated
dioxins	TCDD, other dioxins forms, and furans
DIR	Determination of Inadequate Response
EPA	United States Environmental Protection Agency
ESD	Explanation of Significant Differences
HRS	Hazard Ranking System
MCLs	Maximum Contaminant Levels
MDA	Minnesota Department of Agriculture
MDH	Minnesota Department of Health
MDL	Method Detection Limit
mg/kg	milligrams per kilogram
MP	Malcolm-Pirnie, Incorporated
MPCA	Minnesota Pollution Control Agency
NCP	National Contingency Plan
ng/L	nanograms per liter
NPL	National Priorities List
O&M	Operation and Maintenance
OU	Operable Unit
Pace	Pace Analytical Services, Incorporated
PAHs	Polynuclear Aromatic Hydrocarbons
PCP	Pentachlorophenol
ppb	parts per billion
ppm	parts per million
ppt	parts per trillion
psi	pounds per square inch
QAPP	Quality Assurance Project Plan
RA	Remedial Action
RAL	Minnesota Recommended Allowable Level
RAO	Remedial Action Objectives
RAP	Remedial Action Plan
RCRA	Resource Conservation and Recovery Act
RD/RA	Remedial Design/Remedial Action
Report	Five-Year Review Report
RFRA	Request for Response Action
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
SARA	Superfund Amendments and Reauthorization Act
Site	Ritari Post and Pole Superfund Site
TCDD-Eq.	Tetrachlorodibenzodioxin-Equivalent, a measure of dioxins and furans
Veit	Veit Companies
µg/kg	micrograms per kilogram
µg/L	micrograms per liter

Executive Summary

The former Ritari Post and Pole Superfund Site is located outside of the town of Sebeka, in Wadena County, Minnesota. The surrounding area is remote and is primarily comprised of wooded and undeveloped land with few residential homes and farm land. The Site is a former wood treating facility that manufactured treated fence posts and dimensional lumber. No active manufacturing is currently taking place at the Site. Contaminated soil at the Site has been in contact with ground water and served as a continual source of contamination to the ground water beneath the Site. The historic wood-treating operations caused contamination with pentachlorophenol (PCP), and a group of chemicals including tetrachlorodibenzodioxin (TCDD), other types of dioxins, and furans, (all here referred to as dioxins).

Remedial investigative activities indicated elevated levels of PCP and dioxins, measured as TCDD-Eq., present in the soil and ground water at the Site. The primary risk determined during the risk assessment was the human health risk, since PCP and dioxins are known carcinogens. The exposure pathways associated with the Site included ingestion and dermal absorption of contaminants in ground water as well as ingestion and inhalation of contaminated soil and dust. Thus, the contaminants of concern for soil and ground water at the Site are PCP and dioxins which were present at levels exceeding the acceptable health risk levels.

The soil remedy implemented at the Site consists of a soil and debris consolidation pile on an unlined pad with a RCRA compliant cap constructed for on-Site management and risk reduction associated with PCP- and dioxins-contaminated soil, equipment and construction debris (i.e.-wood chips, sheet rock, etc.). The ground water remedy implemented at the Site consists of residential well replacement and ground water monitoring on a semi-annual basis. O&M activities at the Site include inspection and maintenance of the cap, identification sign and fencing to restrict access to the cap.

This is the first five-year review conducted for the Site. The trigger action for this five-year review is the remedial action (RA) construction start date of September 26, 1998, the date of the first contractor award. This five-year review concluded that the remedy was constructed in accordance with the requirements of the 1994 Record of Decision (ROD), as modified by the 1999 Explanation of Significant Differences (ESD).

The five-year review identified some issues for the Site. Examination of the cap revealed that there had been some burrowing of small animals. Additionally, a small crack along the surface of the cap was noted. Several areas of sparse vegetation on the cap coinciding with slight topsoil erosion were also documented. As a result of the data review, it was noted that PCP and dioxins concentrations have increased in MW-15 and MW-16 during the last sampling round in May, 2003. This may be a result of the remaining impacted soil in the vicinity of the two sheds at the Site. These impacted soils were not addressed during the Remedial Action to allow the property owner to retain use of the sheds. Therefore, the impacted soil in these areas may leach and gradually further contaminate

the surrounding soil and ground water over time, resulting in increased PCP and dioxins concentrations observed downgradient of the sheds. The current ground water monitoring program will continue to provide sufficient analytical data in the future to effectively assess the concentration and extent of the ground water plume.

Recommendations to address the issues above include adding tasks to the O&M manual to allow for the repair of animal burrows and cracks in the topsoil as well as re-seeding of sparsely vegetated areas on the cap during routine O&M activities. Recommendations also include elimination of the current pathway of exposure due to exposed impacted soil and prevention of further contaminant leaching into the ground water at the Site.

Aside from the remaining impacted soil, the soil and ground water remedies are functioning as intended by the ROD, as modified by the ESD. The exposure assumptions used to develop the soil and ground water RAOs are still valid as the land use at the Site has not changed since the wood treating operation ceased and is not likely to change in the foreseeable future. There has been no change in toxicity data or cleanup levels for the Site contaminants. There is no other information that calls into question the protectiveness of the remedy.

The remedy is protective on human health and the environment in the short term. There are no known current exposure pathways and the remedy appears to be functioning as designed. The removal of contaminated soils and materials has eliminated the main source of exposure. The cap over the consolidated contaminated soils and materials has significantly reduced and minimized migration of contaminants to ground water. Direct ingestion of, inhalation of, and contact with, soils and ground water has been prevented or minimized. A long-term ground water monitoring program is in place. Long-term protectiveness will be achieved when the issues affecting protectiveness have been addressed.

FIVE-YEAR REVIEW SUMMARY FORM

Information in bold and italic font is Site-specific information.

SITE IDENTIFICATION		
Site name (from WasteLAN): <i>Ritari Post and Pole Superfund Site</i>		
EPA ID (from WasteLAN): <i>MND980904064</i>		
Region: <i>5</i>	State: <i>MN</i>	City/County: <i>Sebeka, Wadena County</i>
SITE STATUS		
NPL status: <i>Final</i>		
Remediation status (choose all that apply): <i>Complete</i>		
Multiple OUs?* <i>NO</i>	Construction completion date: <i>09 / 26 / 2001 (PCOR)</i>	
Has site been put into reuse? <i>NO</i>		
REVIEW STATUS		
Lead agency: <i>State- Minnesota Pollution Control Agency (MPCA)</i>		
Author name: <i>Maureen Johnson</i>		
Author title: <i>Project Manager</i>	Author affiliation: <i>MPCA</i>	
Review period:** <i>1/28/03 to 09 / 30 / 2003</i>		
Date(s) of site inspection: <i>08 / 21 / 2003</i>		
Type of review: <i>POST-SARA</i> Pre-SARA NPL-Removal only Non-NPL Remedial Action Site <i>NPL STATE Tribe-lead</i> Regional Discretion		
Review number: <i>1 (first)</i>		
Triggering action: <div style="display: flex; justify-content: space-between;"> <div> <i>Actual RA Construction Start Date (Contractor Award)</i> Construction Completion Other (specify) </div> <div style="text-align: center;"> Start at OU# _____ Previous Five-Year Review Report </div> <div style="text-align: right;"> Actual RA </div> </div>		
Triggering action date (from WasteLAN): <i>09 / 26 / 1998</i>		
Due date (five years after triggering action date): <i>09 / 26 / 2003</i>		

* ["OU" refers to operable unit.]

** [Review period should correspond to the actual start and end dates of the Five-Year Review in WasteLAN]

Five-Year Review Summary Form, cont'd.

Issues:

- 1) Evidence of small animal burrows in topsoil at various locations on cap as well as a small crack in topsoil surface on northern portion of cap.
- 2) Areas of sparse vegetative cover and minor soil erosion.
- 3) Absence of sign on fence to warn against unauthorized access to cap.
- 4) Abandonment of wells and piezometers not on current monitoring list.
- 5) Current and future protectiveness may be affected by remaining impacted soil, allowing a future exposure pathway and continued contaminant leaching into ground water.
- 6) Lack of institutional controls to prevent future ground water development and prevent exposure to contaminants in soils at the Site

Recommendations and Follow-up Actions:

- 1) Repair current burrows and cracks and revise the O&M repair task to ensure future burrows and cracks are identified during the Site visits and repaired.
- 2) Re-seed areas of topsoil with sparse vegetation and rake over and repair areas with minor erosion as necessary.
- 3) Install a sign near access gate on fence around cap to warn against unauthorized access or entry.
- 4) Abandon monitoring wells and piezometers not on the current ground water monitoring list, if they will not be used again in future monitoring events.
- 5) Address remaining potentially impacted soil to assure no exposure pathway and to prevent contaminants from further leaching into the ground water at the Site.
- 6) Implement institutional controls to prevent future ground water development and prevent exposure to contaminants in soils at the Site.

Five-Year Review Summary Form, cont'd.

Protectiveness Statement(s):

The soil and ground water remedies are functioning as intended by the ROD, as modified by the ESD, except for some impacted soils noted during this five-year review. The remedy is protective on human health and the environment in the short term. There are no known current exposure pathways and the remedy appears to be functioning as designed. The removal of contaminated soils and materials has eliminated the source of exposure. The cap over the consolidated contaminated soils and materials has minimized migration of contaminants to ground water. Direct ingestion of, inhalation of, and contact with, soils and ground water has been prevented or minimized. A long-term ground water monitoring program is in place. Long-term protectiveness will be achieved when the issues affecting protectiveness have been addressed. The exposure assumptions used to develop the soil and ground water RAOs are still valid, because the land use at the Site has not changed since the wood preserving process was discontinued and is not likely to change in the foreseeable future. There has been no change in toxicity data or cleanup levels for the Site contaminants. There is no other information that calls into question the protectiveness of the remedy.

Other Comments:

None.

**Ritari Post and Pole Superfund Site
Sebeka, Minnesota
First Five-Year Review Report**

I. Introduction

The purpose of this five-year review of the Ritari Post and Pole Superfund Site (Site) is to determine whether the remedy is protective of human health and the environment. The implementation and performance of the remedy was evaluated during this five-year review. The methods, findings, and conclusions based on data and observations are documented in this Five-Year Review Report (Report). In addition, this Report identifies issues which surfaced during the review process and recommendations for resolving these issues.

In cooperation with the U.S. Environmental Protection Agency (EPA), Region 5, the Minnesota Pollution Control Agency (MPCA) conducted the five-year review of the remedial actions implemented at the Site located in Sebeka, Minnesota. The five-year review was performed for the entire Site, as one operable unit (OU). Bay West, Inc. (Bay West), a consultant for the MPCA under the Minnesota Pollution Control Agency and Minnesota Department of Agriculture (MDA) Superfund and Petroleum Storage Tank Investigation and Remediation Multi Site Contract, has also assisted in the five-year review process.

The MPCA is preparing this Five-Year Review report pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) CERCLA §121 and the National Contingency Plan (NCP). CERCLA §121 states:

If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgment of the President that action is appropriate at such site in accordance with section [104] or [106], the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews.

The EPA interpreted this requirement further in the NCP; 40 CFR §300.430(f)(4)(ii) states:

If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after the initiation of the selected remedial action.

The MPCA performed the statutory five-year review of the entire Site from January 28, 2003 through September 30, 2003. This review is the first five-year review at the Site and was triggered by the construction start date, the contractor award date, September 26, 1998. Completion of the five-year review is required due to hazardous substances, pollutants, or contaminants remaining at the Site above levels that allow for unlimited use and unrestricted exposure.

II. Site Chronology

The Site chronology is included below in Table 1 to reflect the timeline of significant Site events

Table 1: Chronology of Site Events

Event	Date	
Ritari began use of creosote wood-treating		1955
Ritari began use of PCP wood-treating		1959
MPCA inspected Ritari Site, noted improper storage and disposal of sludge wastes, collected samples for phenol analysis		1976
MPCA identified PCP in Ratcliff sand-point well		1979
MPCA determined PCP in Ratcliff well was likely from Ritari, Ritari installed new deep well for Ratcliff, but still detected PCP in water		1980
MDA requested PCP analysis for samples of packaged pork from Ritari neighbor, PCP detected in pork liver and packaged meat samples, Ratcliffs also had similar PCP detections in pork liver and meat samples		1980
MPCA sampled new Ratcliff well and Rewersma, Canoy and Georke wells, results indicated PCP contamination		1980
In preliminary inspection, MPCA installed three monitoring wells near Ritari operations, analytical results indicated PCP contamination	December	1980
MPCA noted several large areas of soil contamination at Site, monitoring well sampling indicated PCP present in groundwater		1981
Minnesota Department of Health (MDH) identified PCP in two monitoring wells, old Ratcliff well		1982
MPCA submitted letter requesting that Melvin Ritari submit a remedial action plan to clean up identified contamination at Site		1982
Proposals for remedial action plan submitted to MPCA		1982
MPCA concluded additional information was required to evaluate the proposed remedial alternatives		1983
Discovery of severity of contamination	April 1	1984
Preliminary Assessment	June 28	1985
Site Investigation	September 10	1985
Hazard Ranking System (HRS) score of 30 qualified Site for listing on National Priority List (NPL)	March 27	1986
MPCA issued Request for Response Action (RFRA) to Glenn Ritari, Ritari informed MPCA lack of financial resources prevented him from taking action, MPCA issued Determination of Inadequate Response (DIR)		1986
Proposed Site listing on NPL	January 22	1987
Final listing on NPL	July 22	1987
EPA identified Glenn Ritari as responsible party for Site, Remedial Investigation/Feasibility Study (RI/FS) was performed by Malcolm-Pirnie, Inc (MP), MPCA authorized MP to develop RI/FS Work Plan		1987
Draft RI/FS Work Plan submitted to MPCA, Site assigned to Delta Environmental Consultants, Inc (Delta) to evaluate MP Work Plan Support Document and make necessary modifications		1989
Delta received MPCA approval of RI/FS Work Plan Support Document and performed the RI/FS		1990
Remedial Investigation completed		1992
Focus Feasibility Study completed, EPA approved Plan	January	1994
Public meeting held in Sebeka, MN to discuss Plan and clean-up alternatives	February	1994

Record of Decision (ROD) signed by MPCA and EPA	June 30	1994
EPA removal program removed and disposed of 39 drums of spent wood-treating solution		1997
Installation of three monitoring well nests, replacement of Ritari drinking water supply well and continued groundwater monitoring		1997-1998
MPCA re-evaluated soil alternative to reflect updated information prior to implementing remedial design/remedial action (RD/RA); MPCA developed Explanation of Significant Differences (ESD)	July 2	1999
Bay West prepared a work plan for completing RD for the Site		1999
Final Remedial Design Report completed		2001
Bay West prepared bid specifications for implementation of remedial action plan (RAP)	February	2001
Bay West submitted Quality Assurance Project Plan (QAPP) to MPCA, EPA	June	2001
Veit Companies (Veit) submitted final Operation Plan for Site ¹	June 8	2001
Pre-Final Inspection of Site	September 14	2001
Site construction activities completed	June-October	2001
Bay West submitted Remedial Action Completion Report to MPCA	June	2003
Bay West submitted O&M Plan to MPCA	June	2003
Five-Year review Site inspection	August 21	2003

III. Background

Physical Characteristics

The Site is located at the former Ritari Post and Pole facility outside of the town of Sebeka, in Wadena County, Minnesota (Attachment 1). The Site is located in a rural, non-densely populated area approximately 3.5 miles northeast from Sebeka, Minnesota. The surrounding area is remote and is primarily comprised of wooded and undeveloped land with few residential homes and farm land. The Site area occupies approximately 15 acres with the single operable unit situated east of the residential home, on the southwest area of a 212-acre parcel owned by the Ritari's.

Ground water at the Site generally flows easterly, with an occasional southeasterly trend. Historically at the Site, the contaminated soil, caused by the historic wood-treating operations, has been in contact with ground water and served as a continual source of contamination to the ground water beneath the Site.

The soil RA is a consolidation pile with a RCRA-compliant cap constructed for on-Site management and risk reduction associated with PCP- and dioxins-contaminated soil, equipment and construction debris (i.e.-wood chips, sheet rock, etc.). The consolidation pile and cap occupy an area of approximately 22,000 square feet and is surrounded by a locked chain-link fence that was completed around the perimeter of the unit. The four monitoring wells installed adjacent to the consolidation pile, as well as the additional Site monitoring wells, continue to be monitored on a semi-annual basis, in accordance with the current approved Site O&M Plan.

Land and Resource Use

The Site is a former wood treating facility that manufactured treated fence posts and dimensional lumber. No active manufacturing is currently taking place at the Site. The projected future land use for the Site, as well as the surrounding area, is not expected to change from the current residential use. The soil consolidation area is encompassed by a locked chain-link fence. Additionally, in accordance with the remedy outlined in the ROD and as an institutional control mechanism, a filed and recorded restrictive covenant is planned to 1) prevent installation of water supply wells in the contaminated aquifer in the area of the Site, and 2) prevent future use of the Site property which may result in a release or exposure to contaminants.

Historically and currently, residents in the vicinity of the Site rely on ground water as a water supply resource. Due to the remote, rural location of the Site, a municipal water supply is not available, nor is likely to become available in the near future. However, the drinking water supply wells in the vicinity of the Site have been sampled and a replacement well was installed for an adjacent residence, Ratcliff, in 1980. A replacement water supply well was also installed in a deeper aquifer at the Ritari property in 1998, as part of the Ground water Remedy outlined in the ROD for the Site.

History of Contamination

As stated above, the Site was formerly operated as a wood treating facility. Wood treating began on-Site in 1955. The Ritari's utilized a creosote wood treatment process between start-up until 1957. Creosote treatment operations consisted of dipping wood into creosote holding tanks, then staging the treated wood for drying. In 1959, the Ritari's converted their treatment process from a creosote-based treatment operation to a PCP-based treatment operation. Between 1959 and 1979, a heavy, oil-based PCP mixture was used. In 1979, the Ritari's transitioned to a water-based PCP solution.

The physical treatment method was similar for the heavy, oil-based and the water-based PCP mixtures. The PCP solution was measured and combined with a carrier (oil or water) in the measuring tank. Pressure vessels were then loaded with bundles of lumber or posts on railracks and the PCP solution was heated and pumped into the vessels. The vessels were pressurized to approximately 150 pounds per square inch (psi). This pressure was maintained for three to five hours.

After the pressure was released, excess PCP fluid was pumped from the vessels back into the measuring tank to be reused in the next treatment batch. Railracks holding the treated bundles were then removed from the vessels along the tracks, and the treated wood was transported from the railracks by a forklift. The bundles were transported for drying immediately following treatment and would drip-dry into the ground surface. This practice was discontinued in 1973, when the treated wood was allowed to drain in the pressure vessel overnight prior to drying in the open.

PCP sludge was generated as a residual by-product of the mixing and treatment processes. The sludge was removed from the measuring tank one to two times per year. The sludge was spread onto the ground and allowed to dry in an area identified as the "sludge drying area" immediately to the south of the treatment area. Some of the sludge was also drummed and sold or distributed to neighboring farmers to use for their own wood treating needs.

The Ritari Site was first discovered in 1976 when the MPCA inspected the facility, noting improper storage and disposal of sludge "wastes". Between 1976 and 1980, residential water supply wells in the area as well as packaged pork samples from neighboring properties were sampled and analyzed for phenols. PCP was detected in a water sample from the neighboring well and in the meat from the packaged pork samples analyzed by the MDA. In 1980 the MPCA determined that the contamination was likely from the Ritari facility.

Initial Response

As a result of MPCA actions, monitoring wells were installed and sampling and investigative efforts continued at the Site. In 1985, the Site was scored by the EPA using the HRS and received a score of 30. The Site was listed on the NPL in 1985. The MPCA issued a RFRA in 1986, however, the determined responsible party, Glen Ritari doing business as Ritari Post & Pole, was not financially able to complete the requested Site activities. Subsequently in 1986, the MPCA then issued a DIR, acquiring assistance from the federal Superfund program. The work plan for the RI/FS was approved in 1990, the Remedial Investigation was completed in 1992 and the Focused Feasibility Study was completed in 1994. The Proposed Plan was approved by the EPA in January 1994 and was provided to the public in February 1994, initiating public involvement and comment. The ROD, addressing both soil and ground water, was signed by the MPCA and EPA in June 1994.

Basis for Taking Action

Remedial investigative activities at the Site, completed from May 1990 through December 1992, indicated elevated levels of PCP and dioxins, measured as TCDD-Eq. (subsequently referred to as dioxins throughout this Report), present in the soil and ground water at the Site. The contaminants of concern for soil and ground water at the Site are PCP and dioxins, which were present at levels exceeding the acceptable health risk levels. Polynuclear aromatic hydrocarbons (PAHs) were also detected in soil samples collected from the Site, however, due to the more significant carcinogenic risks associated with PCP and dioxins, clean-up criteria for PAHs were not established for the Site. This was justified because the PAHs would be sufficiently remediated at the same time as PCP and dioxins.

Hazardous substances of concern in each media at the Site include:

Soil

PCP

Dioxins and furans in TCDD-Eq.

Ground water

PCP

Dioxins and furans in TCDD-Eq.

Pentachlorophenol was once a widely used pesticide and wood preservative in the United States, but it is now a restricted use pesticide and is no longer available to the general public. Pentachlorophenol is extremely toxic to humans from acute (short-term) ingestion and inhalation exposure. Acute inhalation exposures in humans have resulted in neurological, blood, and liver effects, and eye irritation. Chronic (long-term) exposure to pentachlorophenol by inhalation in humans has resulted in effects on the respiratory tract, blood, kidney, liver, immune system, eyes, nose, and skin. Human studies are inconclusive regarding pentachlorophenol exposure and reproductive effects. Studies suggest an association between exposure to pentachlorophenol and cancer. EPA has classified pentachlorophenol as a probable human carcinogen.

Dioxins are classified as persistent, bioaccumulative, and toxic pollutants. These are highly toxic, long-lasting substances that can build up in the food chain to levels that are harmful to human and ecosystem health. Persistent means they remain in the environment for extended periods of time. Bioaccumulative means their concentration levels increase as they move up the food chain. As a consequence, animals at the top of the food chain (such as humans) tend to have the highest dioxin concentrations in their bodies. Dioxins can alter the fundamental growth and development of cells in ways that have the potential to lead to many kinds of impacts. These include adverse effects upon reproduction and development from growth during pregnancy through the teenage years, suppression of the immune system that makes a person more susceptible to diseases, disruption of hormonal systems, and cancer. A toxicity effect of dioxin is chloracne, a severe skin rash with an acne-like appearance that occurs mainly on the face and upper body. Other effects of exposure to large amounts of dioxin include skin rashes, skin discoloration, excessive body hair and possible liver damage. The EPA classifies dioxin as a human carcinogen.

Sampling activities performed during the RI indicated soil contamination was present in the surface and subsurface soils, primarily near the treatment area and tanks, the drying (drip) area and the area where the waste sludge was dried. PCP concentrations in soils were observed as high as 12,000 milligrams per kilogram (mg/kg) in the surface soils and up to 970 mg/kg in the subsurface soils. Concentrations of dioxins were generally lower than PCP concentrations but were also detected in the same Site areas with similar horizontal/vertical patterns. Dioxins concentrations were observed at up to 36 micrograms per kilogram ($\mu\text{g/kg}$) in the surface soils and up to 25 $\mu\text{g/kg}$ in the subsurface. These peak concentrations were observed in the samples collected from the treatment and sludge drying areas.

During the RI, twenty-six monitoring wells/piezometers were installed to observe the extent of contamination, determine aquifer characteristics and assess the plume stability. The contaminants of concern were detected in the upper sand/outwash aquifer. The lower sand and gravel aquifer was not investigated during the RI or other Site activities, because no indication of contamination was observed for this geologic unit. Similar to the results of the soil sampling, ground water samples collected at the Site indicated the highest presence of contaminant concentrations near the treatment areas. Contaminant levels near the wood treatment area ranged from 88 to 1,800 $\mu\text{g/L}$ for PCP and 56 to 1,640 nanograms per liter (ng/L) for dioxins. The RI Report indicated contaminant levels appeared to decrease with distance from the treatment area of the Site, as well as vertically within the upper aquifer. The RI Report also stated that the extent of the PCP and dioxins contamination seemed to be limited to the Ritari property. Attachment 1 contains a Site diagram to illustrate the extent of soil and ground water contamination discovered during the RI.

The primary risk determined during the risk assessment was the human health risk, since PCP and dioxins are known carcinogens. At the time the RI was performed, PCP was detected in ground water samples at up to 6,400 $\mu\text{g/L}$, which was much greater than the Minnesota Recommended Allowable Level (RAL) of 200 $\mu\text{g/L}$. Additionally, dioxins

was considered to cause a higher risk for carcinogenic effects using the EPA acceptable risk level of one additional cancer case per million people. Concentrations of dioxins, measured as TCDD-Eq., have been measured at levels greater than the acceptable risk limit. The exposure pathways associated with the Site included ingestion and dermal absorption of ground water as well as ingestion and inhalation of soil and dust.

The Site contamination in soil and ground water was caused by improper process and disposal of wood-treating creosote and pentachlorophenol on the Site property. Response actions included:

- 1) The EPA Removal Program removed and disposed of 39 drums of spent wood treating solution in 1997.
- 2) The ground water RA includes institutional controls, replacement of a private water supply and monitoring, with a contingency plan.
- 3) Under the soil RA in 2001, the contaminated soil and materials were consolidated under a cap and buildings were cleaned.

IV. Remedial Actions

Remedy Selection

The ROD for the Site was signed by the MPCA and the EPA on June 30, 1994. Summarized RA components specified in the ROD include: building and equipment decontamination and/or disposal; investigation of soil washing options; excavation and off-Site treatment of approximately 1,800 cubic yards of dioxins-contaminated soil; excavation and on-Site biotreatment of approximately 3,000-8,000 cubic yards of PCP contaminated soil in a lined and bermed treatment cell; soil treatment cell monitoring to examine effectiveness of treatment; topsoil application and revegetation of Site; institutional controls implementation including fencing the Site, establishing a well advisory to prevent installation of wells in the contaminated aquifer and a deed restriction on the property; installation of a deep aquifer water supply well for the Ritari residence; and ground water monitoring at the Site.

The ROD outlined the remedial action objectives (RAOs) for the Site specifically for each media. The RAOs are summarized as:

Soil

- To reduce exposure to PCP and dioxins-contaminated soils on-Site including the ingestion, direct contact or inhalation of dust.
- To prevent continued/future impact of drinking water due to the direct contact and migration of the contaminated soils and the ground water.
- Clean-up criterion of 40 ppm PCP and 1 ppb dioxins were established for the contaminated soils.

Ground water

- To prevent ingestion of ground water contaminated with PCP and dioxins in excess of acceptable drinking water standards.
- To prevent migration of contaminated ground water to downgradient users.

Subsequent to signature of the ROD in 1994, the ground water RAs were implemented including installation of a deep water supply well for the Ritari residence and initiation of a ground water monitoring program. Institutional controls for ground water, including a filed and recorded restrictive covenant, is planned to prevent installation of water supply wells in the contaminated aquifer in the area of the Site and to prevent future use of the Site property which may result in a release or exposure to contaminants. Aside from the institutional controls for ground water, the ground water RA activities were completed in 1998. At that time, the MPCA reassessed the soil RA selected for the Site based on updated information and completed an ESD. The ESD addressed the effectiveness and costs of the proposed soil RA as well as the reevaluated risks and proposed the following modifications to the RAs specified in the ROD:

- Implementation of the contingency remedy outlined in the ROD, which involves excavation of contaminated soils and consolidation and containment utilizing a

RCRA compliant cap. Execution of this RA would replace both on-Site biotreatment of PCP contaminated soils via a treatment cell and off-Site treatment and disposal of dioxins- contaminated soil. Similarly, this would eliminate the need for investigation of soil washing.

- As part of the RCRA facility closure, the ROD dictated that all Site buildings and equipment should be demolished and removed. Instead, the ESD specifies that the buildings be assessed individually to determine if contamination is present and if so, decontaminate if possible. Thus, only the structures and equipment that require full demolition or dismantling would undergo removal from the Site.

An ESD was signed by the MPCA in June 1999 and was approved and signed by the Director of the Superfund Division for the EPA on July 2, 1999. The MPCA re-evaluated the chosen soil alternative to reflect updated information, resulting in the use of the ROD's contingency remedy for a RCRA closure of the facility. Bioremediation was rejected because of new information about the active work during O&M, time for achieving goals, lowered expectations for success, and expense for the process. As a result separation of dioxins from PCP for incineration was not necessary and soil washing was not studied. The remote location and low probability of significant exposure to contaminated soils did not justify the time and cost of incineration of the dioxins. The ESD noted that the ground water RA, as specified in the ROD, had already been implemented at the Site with the exception of institutional controls.

Remedy Implementation

The RAs took place in several phases for the ground water and soil at the Site. The ground water RA was initiated after signature of the ROD. The monitoring well network for plume observation was installed in 1997 and updated in 1998. The EPA removed and disposed of thirty-nine drums containing spent wood treating solution, under an EPA removal program. A deep well was installed for the Ritari residence, per the ROD, in January 1998. The RA contractor award was made on September 26, 1998, and this is the Construction Start date. The ESD noted that the ground water remedy had been implemented in accordance with the ROD; this included modifications to the ground water RA.

The soil RAs were detailed in the ROD and later modified by the ESD, signed by both the MPCA and EPA in July 1999. Subsequent to approval of the ESD, the MPCA initiated the RD phases, contracting Bay West for assistance in 1999. In 2001, Bay West submitted the Final Remedial Design Report identifying excavation areas, limits and volumes as well as additional activities as part of the RAP. Bay West assisted the MPCA in preparing bid specifications as well as on-Site oversight for performance of the work outlined in the RAP in February 2001. Veit was selected as the construction contractor and was authorized to proceed on April 19, 2001. Veit completed mobilization and preparation activities at the Site from June 18-22, 2001. The QAPP designed for the soil RA activities at the Site was approved by the EPA on June 20, 2001.

Site construction activities began with installation of the access road during the week of June 18-22, 2001. Subsequently, the consolidation pad was constructed during the following week of June 25, 2001. The process began by clearing and grubbing the consolidation pad area to a minimum of eighteen inches below grade. Following clearing and grubbing activities, the base of the consolidation pad was laid. The base pad consisted of 144 feet by 152 feet of one foot minimum-thick class 5 material placed on the ground surface. The base material was laid and compacted in six inch lifts, in accordance with the project specifications. A 24 inch wide by 24 inch deep anchor trench was constructed around the perimeter of the consolidation pad. After completion of construction activities, consolidated materials were laid and compacted within the pile starting from the center of the pad moving outward, in conformance with the maximum height and required slope specifications.

Contaminated soil was excavated and sampled in accordance with the RAP, final design specifications and the QAPP in the seven areas from June 29 to July 11, 2001. Analytical results indicated the need for additional excavation in some areas, which was performed from August 16-18, 2001. Subsequent to the second round of excavation, the soil verification sample results indicated that the contaminated soil had been removed.

Additional processing and consolidation of contaminated woodpiles, rubber hose, sheetrock from demolition activities, drill cuttings, building materials and scabbled concrete and debris was complete by the end of August 2001. Metal that could not be cleaned or used as scrap metal was added to the consolidation pile. The excavation areas and on-Site man-made pond areas were backfilled on September 7, 2001.

Two diked areas, AST#1 and #2 dike and AST #3 and #4 dike, and on-Site buildings were decontaminated in accordance with the Final Design Report and decontamination specifications. In the first area, AST #1 and #2, the ASTs were cleaned and removed and the flooring was scraped, washed and sampled. Sample results indicated contamination was still present within the concrete thus the concrete floor was broken up and added to the consolidation pile. Similarly, the second diked area, AST #3 and #4, required the concrete floor to be broken up and mixed with the contaminated soil and materials within the consolidation pad.

On August 9, 2001, concrete samples were collected from the floor of the Pettibone building on-Site. Analytical results indicated elevated levels of PCP contamination within the concrete floor of the Pettibone building. The concrete floor was broken up and consolidated and a new concrete floor was poured in place. The office building present on-Site contained insulation containing asbestos. Approximately one cubic yard of asbestos waste was removed and disposed of at the Elk River Landfill, in accordance with an asbestos removal plan that was submitted by Veit and approved by the MPCA. Contaminated drywall from the building was consolidated and the floor in the building was decontaminated. The floor was then covered with a 40-mil textured HDPE liner and covered with a fresh layer of concrete.

Subsequent to consolidation of contaminated soil and other Site materials onto the unlined pad, the multi-layer RCRA compliant cap was constructed. The cap was constructed during the week of September 7, 2001 and included installation of a geosynthetic clay layer, flexible geomembrane cover, a geonet, a separation/filtration geotextile, a layer of cover soil and a layer of topsoil. The topsoil was then raked and hydroseeded with a grass mixture. The cap was constructed in accordance with all Site specifications and specific material handling specifications. A gas control system was also installed within the consolidation pile, prior to construction of the cap. Additionally, a chain-link fence and locking access gate were installed to surround the perimeter of the consolidation area in October 2001.

Finally, four shallow monitoring wells were installed during the week of September 17, 2001 to monitor the consolidation pile. The four wells have been added to the list of ground water sampling wells for the Site. Prior to this time, on July 5, 2001, twelve monitoring wells were abandoned. Well installation and abandonment activities were performed in accordance with applicable MDH rules and regulations.

Purge water resulting from purging activities for the four monitoring well installations was containerized on-Site. Similarly, water was collected during equipment and building decontamination and other Site activities. Both the purge and decontamination water were treated on-Site utilizing a granular activated carbon system. Treated water was sampled, and as a result of contaminant detection, was treated again. After the contaminants were not detected in the treated water samples, the treated water was used to irrigate the newly seeded consolidation area. The granular activated carbon vessels were disposed of off-Site.

Soil RAs were completed at the Site on October 29, 2001. On behalf of the MPCA, Bay West compiled the Remedial Action Completion Report and O&M Plan which were submitted to the State in June 2003 for approval. Just prior to completion of Site activities on September 14, 2001, both EPA and MPCA staff visited the Site and conducted a pre-final inspection. Assessment during the pre-final inspection determined that the State contractors had constructed the remedy in compliance with the RD specifications and that further construction response would not be necessary at the Site.

Comparing the Remedial Action Completion Report dated June 2003 and data collected by Delta in 1993, it was noted that dioxins contaminated soil concentrations in excess of the Site cleanup goal were detected in soil sample location S75, approximately 80 feet south of the log peeler and northwest of the cap, on Figure 6, but this area was not remediated.

System Operations/Operation and Maintenance

Ground water Monitoring

Long term ground water monitoring will be performed at the Site through the collection of ground water samples from a network of fourteen Site monitoring wells. These wells include eleven monitoring wells and three residential wells. Ground water samples will be collected on a semi-annual basis and submitted for fixed-base laboratory analysis for PCP and dioxins TCDD-Eq. Field sampling and laboratory analysis will be performed in accordance with the June 2003 revision of the QAPP. The QAPP outlines key personnel, sampling procedures, sample analysis, data quality objectives, quality control measures, and data reporting requirements.

Site Operation and Maintenance

O&M at the Site is expected to be minimal, consisting primarily of inspection and general upkeep of the consolidation area. O&M activities will include a semi-annual inspection, likely performed at the time of the ground water sampling event. The inspection will consist of visual examination of the Site including the access road, Site identification sign, and the consolidation area as well as an inspection of the gate, fencing, and cap. The consolidated area has been and will continue to be examined for settlement and erosion and brushed to rid plants with taproots. Additionally, filling in of animal burrows with topsoil may also be required. Semi-annual inspections and recommendations for any additional maintenance will be recorded in the field.

O&M activities are expected to continue at the Site for an indefinite period of time which is quantified as thirty years for planning purposes. Additional periodic maintenance, recommended from the semi-annual inspection, may be required during this time and may include activities such as fence repair or lawn maintenance of the consolidation area.

Site O&M activities performed to date include ground water sampling as well as Site inspection including the fence, cap, sign and the removal of plants with taproots. These activities are performed two times per year, with the most recent sampling event on April 30 and May 1, 2003 and the most recent Site inspection/O&M activities at the time of the five-year review Site inspection on August 21, 2003. During the August Site inspection, it was noted that reseedling may be necessary in a few areas of more sparse vegetation, as well as filling in and reseedling in areas of animal burrows in the topsoil of the consolidation pile.

O&M Costs

The O&M costs associated with the Site include ground water monitoring/sampling and consolidation pile inspection and occasional maintenance.

The cost estimate breakdown from ROD, Exhibits A and B, 1994, is shown here.
Note the RA construction was completed in 2001, 7 years later.

1 yr Soils O&M	\$10,000	30 yr, 5%	\$153,725
1 yr Ground Water Monitoring	\$20,000	30 yr, 5%	\$307,449
Totals	\$30,000		\$461,174

The total annual cost by year for the first fiscal year of operation from 7/1/2002 to 6/30/2003 is \$25,943.31, and the breakdown is as follows.

Sampling	3,379.78
Soils inspection	120.35 (when complete next fiscal year, planned is 331.73)
Annual report	2701.68
Total	\$25,943.31

The cost of state staff oversight is not included.

Table 2: Annual System Operations/O&M Costs

Dates		Total Cost rounded to nearest \$1,000
From	To	
July 1, 2002	June 30, 2003	\$26,000

It is anticipated that a slightly elevated cost for consolidation pile maintenance may occur in 2003 to complete the reseeding activities discussed previously to establish a complete, homogeneous vegetative cover. The O&M costs are estimated at approximately \$30,000 per year for the standard O&M activities of ground water sampling/monitoring and a thorough Site inspection twice per year, not including QAPP revision. Additional maintenance activities as required at the Site, including fence maintenance or vegetation reseeding, require the anticipation of estimated additional funds of \$5,000 per year every five years. Analysis costs may be reduced significantly by using a more cost-effective laboratory in the future. The previous annual costs used the state laboratory. This laboratory has a high level of QA, a level no longer needed for this site's analyses. Subsequent private laboratory data may be compared to it. A QAPP revision is planned to utilize a private laboratory at less cost in the next years.

A concern is that, in the future, the cost of O&M could cause the site to be one of those items dropped during hard economical times. As much as possible should be done to reduce risks and to minimize O&M costs.

V. Progress Since the Last Review

This was the first five-year review for the Site.

VI. Five-Year Review Process

Administrative Components

Potentially interested parties, including the EPA, MPCA and MPCA consultants were notified of the start of five-year review. The members of the review team included:

Jon Peterson, EPA
Maureen Johnson, Project Manager, MPCA
Dave Scheer, Hydrogeologist, MPCA
Ed Bacig, Bay West, Inc., MPCA consultant
Alicia McNeil, Bay West, Inc., MPCA consultant
Megan Kari, Bay West, Inc., MPCA consultant

The MPCA established the review schedule which included the following components:

- Community Involvement
- Document Review
- Data Review
- Site Inspection
- Local Interviews and
- Five-Year Review Report Development and Review

The schedule extended from January 28, 2003 through September 30, 2003.

Community Notification and Involvement

Community notification and other community involvement activities were arranged and conducted by the MPCA. The MPCA community involvement coordinator for the Site is Michael Rafferty. Copies of community notifications are included in Attachment 2.

Document Review

This five-year review consisted of a review of relevant documents for the Site including the ROD, ESD, O&M records and monitoring data. A complete list of documents reviewed is provided in Attachment 3. Applicable clean-up standards, as listed in the 1994 ROD and 1999 ESD, were also reviewed.

Data Review

Ground water Monitoring

Ground water monitoring for PCP has been conducted at the Site since 1980. Ground water monitoring data for the last five years for PCP was reviewed for the fourteen (14) monitoring and residential wells on the current monitoring list. Historical data for the wells was also reviewed, as available. Table 3 shows PCP concentrations for the two most recent sampling events for each of the fourteen monitoring locations.

In general, PCP concentrations in ground water have gradually decreased over time. Two residential wells, the new Ratcliff well and the Ritari well, have been monitored since 1979 and 1980, respectively. In each well, concentrations were the highest in the early 1980's and decreased to levels of non-detection in 1996. Neither well has increased above the detection limit for PCP, 0.5 µg/L, since that time. Additionally, the Worm well as well as MW-11U and MW-11L have not been detected above the detection limit for PCP since 1996.

PCP concentrations in samples from two monitoring wells, MW-10U and MW-13U, were near 900 µg/L in the early 1990's but have since dramatically decreased. In 2003, PCP concentrations detected in MW-10U have decreased to <1.4 µg/L while concentrations in MW-13U had increased to 220 µg/L. MW-13L concentrations have also decreased from 6.9 µg/L in 1996 to the level of detection (0.5 µg/L) in 2003. Concentrations in MW-12U, MW-14 and MW-17 decreased significantly in PCP concentration after the remedy completion in October 2001. The monitoring wells, MW-10L, MW-15, and MW-16 have had increased PCP concentrations since January 2001.

Ground water monitoring for dioxins began in April 2003. Dioxins concentrations were detected in 9 of the 14 samples collected from the Site monitoring wells, as shown in Table 3. The detections ranged from 1.00×10^{-5} ng/L in MW-10L to 0.17 ng/L in MW-15. Dioxins was not detected in the three residential wells during this sampling event.

As described in the ROD, the Site does not have defined ground water clean-up criteria since the Maximum Contaminant Levels (MCLs) may or may not be applicable to the Site. Subsequently, the MCLs are used for comparative purposes only. As shown in Table 3, the MCLs for PCP and dioxins are 1.0 µg/L and 30 pg/L (or .030 ng/L), respectively. As the above results indicate, five of the six monitoring wells with PCP detections currently exceed the MCL for PCP at this Site. PCP was not detected in MW-10U; however, the raised detection limit for this sample is not enough to determine whether the result is above the MCL. Samples from well MW-15 exceed the MCL for dioxins.

Table 3: Ground water Analytical Results

Parameter	PCP (µg/L)		TCDD-Eq. (ng/L)
MCL	1.0		.030
Sample Date	October 2001	May 2003	May 2003
Ratcliff Well	<0.5	<0.5	0.00
Worm Well	<0.5	<0.5	0.00
Ritari Well	<0.5	<0.5	0.00
MW-10L	<0.5	0.55	1x10 ⁻⁵
MW-11L	<0.5	<0.5	0.00
MW-11U	<0.5	<0.5	0.00
MW-13L	<0.5	<0.5	1.2x10 ⁻⁵
MW-12U	<0.5	<0.5	6.3x10 ⁻³
MW-15	3.1	1,230	0.17
MW-10U	18	<1.4	1.8x10 ⁻³
MW-17	25	4.5	2.7x10 ⁻²
MW-13U	42	220	8.4x10 ⁻⁴
MW-14	53	6.7	2.8x10 ⁻³
MW-16	190	450	2.3x10 ⁻²

Note – Bold results indicate exceedance of MCL

The increase in PCP concentrations and the dioxins compounds detected in MW-15 and MW-16 may be a result of the remaining impacted soil in the vicinity of the two sheds at the Site. These source areas were not addressed during the Remedial Action to allow the property owner to retain use of the sheds. RA Report photographs of the excavation near a shed show a sheen on the ground water, indicating contaminated soils are saturated there. Therefore, the impacted soil in these areas may gradually further contaminate the surrounding soil and ground water over time, resulting in increased PCP and dioxins concentrations observed in MW-15 and MW-16. Since MW-13U is downgradient of MW-15 and MW-16, it may already be showing the effects of residual contamination migrating through the ground water across the Site.

The current ground water monitoring program will continue to provide sufficient analytical data in the future to effectively monitor the concentration and extent of the ground water plume and the effectiveness of the cap.

Site Inspection

The Site inspection was conducted on August 21, 2003 by MPCA hydrogeologist Dave Scheer and MPCA consultants Ed Bacig and Alicia McNeil, Bay West. The purpose of the inspection was to assess the protectiveness of the remedy, including the presence of fencing to restrict access, the integrity of the cap and the condition of Site monitoring wells.

Several minor issues have been identified for the Site. Examination of the cap revealed that there had been some burrowing of small animals. A small crack along the surface of the cap was noted. Several areas of sparse vegetation on the cap coinciding with slight topsoil erosion were also documented. Additionally, some monitoring wells and piezometers not on the current monitoring list could be considered for abandonment if they will not be used again in the future. Specifically, as documented in the photographs and checklist, monitoring well MW-14U has experienced significant frost heaving resulting in an unstable casing above the surface. The Site Inspection Checklist and photographs taken during the Site visit are provided in Attachment 4.

Interviews

The MPCA staff conducted interviews for the Site. The interviews are provided in Attachment 4.

VII. Technical Assessment

Site Clean-Up Goals

As described in Section IV, the ROD outlined the following RAOs for each media at the Site:

Soil

- To reduce exposure to PCP and dioxins contaminated soils on-Site including the ingestion, direct contact or inhalation of dust.
- To prevent continued/future impact of drinking water due to the direct contact and migration of the contaminated soils to the ground water.
- Clean-up criterion of 40 ppm PCP and 1 ppb dioxins. were established for the contaminated soils.

Ground water

- To prevent ingestion of ground water contaminated with PCP and dioxins in excess of acceptable drinking water standards.
- To prevent migration of contaminated ground water to downgradient users.

The ROD did not specify clean-up criteria for the ground water at the Site. The MCLs established pursuant to the Safe Drinking Water Act (SDWA), as amended, are not applicable but are relevant and appropriate because this is an aquifer which is or may be used as a drinking water source near the Site. Subsequently, the MCLs for PCP and dioxins are used for comparative purposes only. The MCL for PCP is 1 ppb and the MCL for dioxins is 0.03 parts per trillion (ppt).

The MPCA reassessed the soil RA selected for the Site based on updated information and completed an ESD. The ESD addressed the effectiveness and costs of the proposed soil RA and noted that the ground water RA, as specified in the ROD, had already been implemented at the Site with the exception of institutional controls. The ESD made the following changes to the soil RA at the Site:

- Implementation of the contingency remedy outlined in the ROD, which involves excavation of contaminated soils and consolidation of containments under a RCRA compliant cap. Execution of this RA would be in place of both on-Site biotreatment of PCP contaminated soils via a treatment cell and off-Site treatment and disposal of dioxins contaminated soil. This would eliminate the need for evaluation of soil washing.
- As part of the RCRA facility closure, the ROD dictated that all Site buildings and equipment should be demolished and removed. Instead, the ESD specifies that the buildings be assessed individually to determine if contamination is present and if so, decontaminate if possible. Thus, only the structures and equipment that require full demolition or dismantling would undergo removal from the Site.

Evaluation of Remedial Actions

Question A: Is the remedy functioning as intended by the decision documents?

The review of documents, ARARs, risk assumptions and the results of the Site inspection indicates that the remedy is functioning as intended by the ROD, as modified by the ESD, except several small areas discovered during this review which may have unremediated contaminated soil. The stabilization and capping of contaminated soils, wood chips and construction debris has achieved the soil remedial objectives to minimize the migration of contaminants to ground water and prevent direct contact with, or ingestion of, contaminants in soils. Upon addressing impacted soils and implementation of institutional controls, potential exposure to and ingestion of contaminated soils and ground water will be prevented. The current ground water monitoring program is effectively monitoring the ground water plume thus it is also functioning as intended by the decision documents.

A few source areas which may contain impacted soil have been noted on Figure 6, Limits of Excavation and Remaining Contamination, in Attachment 1. Soils at the surface next to the two sheds, one near the southwest corner of the cap approximately 80 feet south of the log peeler and one northwest of the cap, were not addressed during the Remedial Action to allow the property owner to retain use of the sheds. The area has been revegetated. Excavation records note a sheen on the ground water at a deeper soil level. Therefore, the impacted soil in these areas may gradually further contaminate the surrounding soil and ground water over time, resulting in increased PCP and dioxins concentrations in ground water observed downgradient of the sheds. Another unremediated area may be near soil sample location S75, 85 feet south of the log peeler and 40 feet west of the power line.

O&M of the cap has generally been effective. As noted in Section VI, a few small areas showed evidence of burrowing animals in the topsoil cover in addition to a small crack in the surface of the topsoil. Neither the burrows nor the crack penetrated beyond the topsoil layer. Also noted during the Site inspection were four areas of sparse vegetative cover on the cap coinciding with minor topsoil erosion. Plants with tap roots were identified and removed during the Site visit. The O&M manual will be updated to include the tasks of inspecting and repairing any small animal burrows or cracks during future Site activities as well as re-seeding sparse areas on the cap. This change will result in a slight increase of O&M annual costs.

There were a few minor opportunities for system optimization observed during this review. As mentioned above, the remedy can be optimized by repairing cracks and animal burrows in the topsoil on the cap during semi-annual Site O&M activities. Additionally, re-seeding areas with sparse vegetative cover can also be added to help maintain the protectiveness of the remedy. The monitoring well network provides sufficient data to assess the plume migration and current maintenance of the cap is

sufficient to maintain its integrity. A warning sign could be installed on the fence around the cap to warn against unauthorized personnel/trespasses.

The current institutional controls include fencing to prevent access to the cap. The cap, fencing and surrounding area was undisturbed and no new uses of ground water were observed at or near the Site. Additionally, a filed and recorded restrictive covenant is planned to prevent installation of water supply wells in the contaminated aquifer in the area of the Site to prevent future use of the Site property which may result in a release or exposure to contaminants.

Question B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of remedy selection still valid?

The exposure assumptions used to develop the soil and ground water RAOs are still valid as the land use at the Site has not changed and is not likely to change in the foreseeable future. There has been no change in toxicity data or cleanup levels for the Site's PCP and dioxins.

The EPA's Dioxin Reassessment draft documents have been in development since 1994, including during the period the Ritari site ROD was being written. Using the scientific basis references in EPA's most recent Draft Dioxin Reassessment documents (2001), the MDH established a drinking water Health Risk Level for PCP at 3 ug/l and provided a recommended level of 33-50 TCDD-Toxicity Equivalents/l for dioxins (the term TCDD-Toxicity Equivalents is another name for TCDD-Eqs). The MPCA's Guidance Documents for 2003 show the PCP Soil Reference Value is 71 mg/kg and the dioxins Soil Reference Value is 0.0002 mg/kg.

The soil RA was completed and currently remains effective at meeting the RAOs at the Site. However, as mentioned in the previous subsection, impacted soil remains at the site, which was not removed to allow the homeowner to retain use of the sheds. This impacted soil may gradually equilibrate with the soil and ground water at the Site over time. The ground water RA was also completed and semi-annual monitoring is effective to indicate changes in ground water conditions. Both the soil and ground water remedies are progressing as expected by the ROD, as modified by the ESD, with the exception of the unremediated soils specified previously.

The MDH provided information about previous health consultations. Discussions are resumed about the establishment of a special well construction area stated in the ROD. The special well construction area advisory process will not detect shallow wells installed by property owners. The site area is mostly farms and this causes a concern about bioaccumulation of dioxins in farm animals. This concern should be alleviated in two ways: 1) with the institutional controls recorded with the deeds at the Wadena County Recorder's Office, and 2) with communications with the local property owners that convey the importance of using existing clean wells and not installing shallow wells for any purpose including watering animals.

Question C: Has any other information come to light that could call into question the protectiveness of the remedy?

The MPCA staff is not aware of any new information that could call into question the protectiveness of the remedy.

Technical Assessment Summary

Aside from the remaining impacted soil at the Site and the plans for institutional controls, the remedies are functioning as intended by the ROD, as modified by the ESD. The exposure assumptions used to develop the soil and ground water RAOs are still valid as the land use at the Site has not changed since the wood preserving activity was discontinued and is not likely to change in the foreseeable future. There has been no change in toxicity data or cleanup levels for the Site contaminants. There is no other information that calls into question the protectiveness of the remedy.

VIII. Issues

Table 4: Issues

Issues	Affects Protectiveness (Y/N)	
	Current	Future
Evidence of small animal burrows in topsoil at various locations on cap, small crack in topsoil on northern portion of cap	N	N
Areas of sparse vegetative cover, minor soil erosion	N	N
Absence of a sign on fence to warn against unauthorized access to cap	N	N
Abandonment of wells and piezometers not on current ground water monitoring list	N	N
Future protectiveness may be affected by potentially impacted soil allowing a future exposure pathway and continued contaminant leaching into ground water	N	Y
Lack of institutional controls to prevent future ground water development and prevent exposure to contaminants in soils at the Site	N	Y

IX. Recommendations and Follow-up Actions

Table 5: Recommendations and Follow-up Actions

Issue	Recommendations/ Follow-up Actions	Party Responsible	Oversight Agency	Milestone Date	Follow-up Actions: Affects Protectiveness (Y/N)	
					Current	Future
Animal Burrows/ Cracks	Repair current burrows and cracks and revise the O&M repair task to ensure future burrows and cracks are identified during the Site visits and repaired.	MPCA	MPCA	Fall 2003	N	N
Sparse Cover/ Minor Erosion	Re-seed areas of topsoil with sparse vegetation; rake over and repair areas with minor erosion as necessary	MPCA	MPCA	2004	N	N
Absence of warning sign	Install a sign near gate on fence around cap to warn against unauthorized access or entry	MPCA	MPCA	2004	N	N
Abandon unused wells and piezometers	If monitoring wells and piezometers are not on the current ground water monitoring list, abandon them if they will not be used again in the future	MPCA	MPCA	2004	N	N
Potentially Impacted soil	Address remaining potentially impacted soil to assure no future exposure pathway and to prevent contaminants from further leaching into the ground water at the Site.	MPCA	MPCA	2004	N	Y
Lack of institutional controls for ground water	Implement institutional controls to prevent future ground water development and prevent exposure to contaminants in soils at the Site.	MPCA	MPCA	Fall 2003	N	Y

Protectiveness Statements

Short-term Protectiveness

The remedy is protective of human health and the environment in the short-term because the remedy appears to be functioning as designed, the exposure assumptions, toxicity data, and RAOs used at the time of remedy selection are still valid, and there are no known current exposure pathways. The cleanup removed the soils that were the source of exposures and the non-saturated soils that were a source of ground water contamination; monitoring of the cap is continuing; and the institutional controls are planned. Although some areas were found during data review to need checking by sampling, this review determined that an immediate threat is not present because the small areas needing sampling do not pose unacceptable risk. The areas needing sampling are not in areas that are regularly used, revegetation is occurring, and access is limited. If the possibility of exposure routes is eliminated, short-term protectiveness of the soil remedy will be confirmed. The ground water portion of the remedy is protective in the short-term because migration of contaminants is shown to be controlled as measured by sampling results from the monitoring program.

Long-Term Protectiveness

The remedy will be protective of human health and the environment in the long-term because the remedy appears to be functioning as designed, the exposure assumptions, toxicity data, and RAOs used at the time of remedy selection are still valid, and the institutional controls are planned. Removal of the non-saturated soils has minimized migration of contaminants from soil to ground water. Direct ingestion of, and contact with, contaminants in soils has been significantly reduced and minimized. The remedy will be protective of human health and the environment in the long-term when the issues affecting protectiveness have been addressed, including the questionable small soils areas and the institutional controls. If the possibility of exposure routes is eliminated, long-term protectiveness of the soil remedy will be confirmed. The ground water portion of the remedy is protective in the long-term because a long-term ground water monitoring program is in place to detect any contaminants threatening to migrate downgradient off-site, and the ground water conditions are such that little or no migration is expected.

Summary Protectiveness Statement

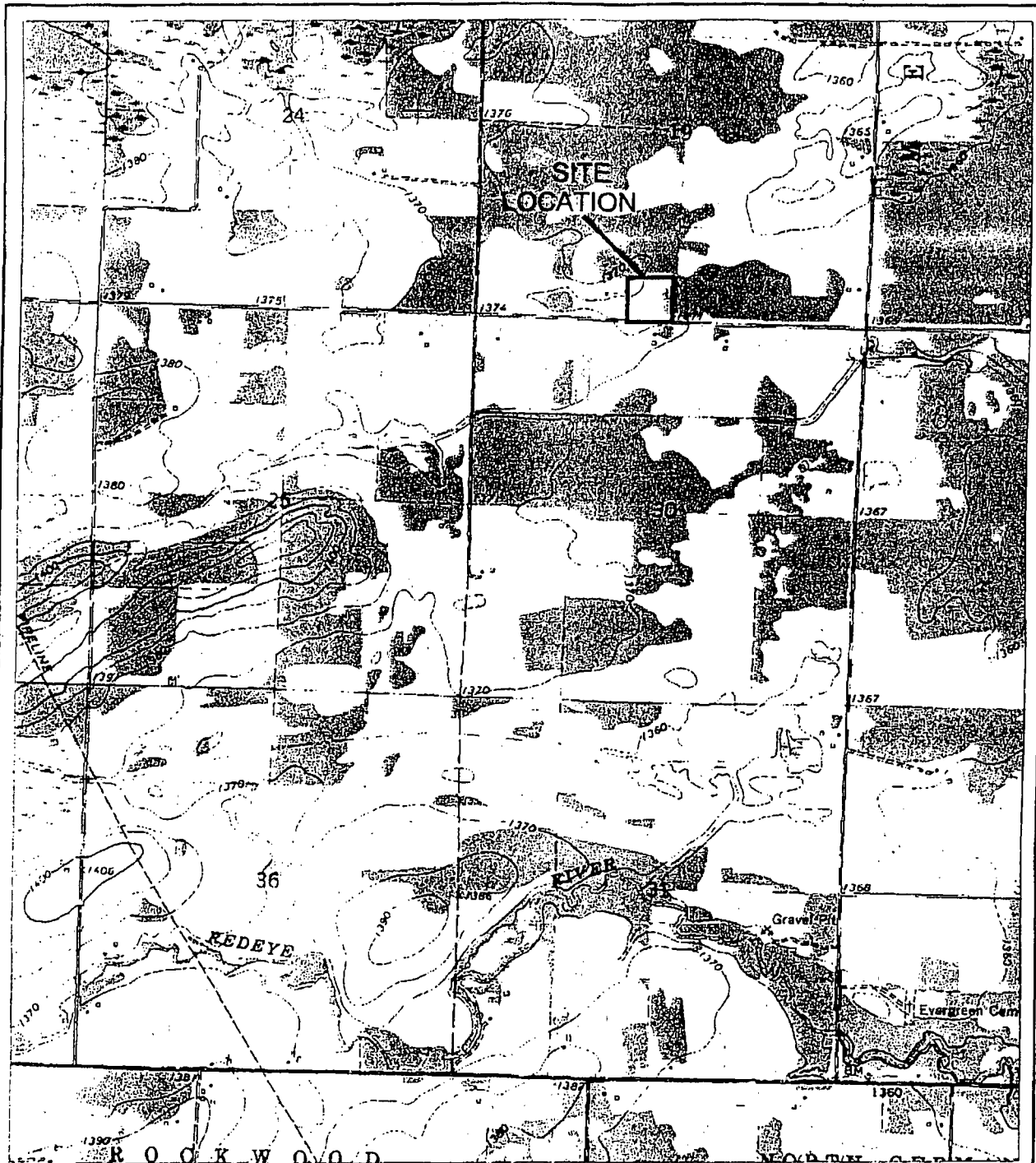
The remedy is protective on human health and the environment in the short term. There are no known current exposure pathways and the remedy appears to be functioning as designed. The removal of contaminated soils and materials has significantly reduced and minimized the source of exposure. The cap over the consolidated contaminated soils and materials has minimized migration of contaminants to ground water. Direct ingestion of, inhalation of, and contact with, soils and ground water has been prevented or minimized. A long-term ground water monitoring program is in place. Long-term protectiveness will be achieved when the issues affective protectiveness have been addressed.

XI. Next Review

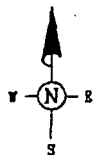
The next five-year review for the Ritan Post and Pole Superfund Site is required by September 30, 2008, five years from the date of this review and ten years from the RA construction start date.

Attachment 1
Site Maps

Figure 1	Site Location Map
Figure 2	Site Map Showing Current and Former Monitoring Well Locations
Figure 2-2	Aerial Extent of PCP and TCDD-Eq. in Ground water (From RI)
Figure 3	PCP in Upper Ground water Wells – May 1, 2003
Figure 4	Dioxins/Furan in Upper Ground water Wells – May 1, 2003
Figure 5	Ground water Elevations for Upper Wells – May 1, 2003
Figure 6	Limits of Excavation and Remaining Contamination
Figure 7	Sparse Vegetation Areas on Cap During 5-Year Review Site Visit



0 2000
SCALE IN FEET



SOURCE:
USGS 7.5 MINUTE
TOPOGRAPHIC MAP—
SEBEKA, MN
QUADRANGLE

ENGR'G	E.B.	DATE
DRAWN	K.M.	2/4/01
REV.		



BAY WEST Inc.
ENVIRONMENTAL SERVICES
ST. PAUL, MN

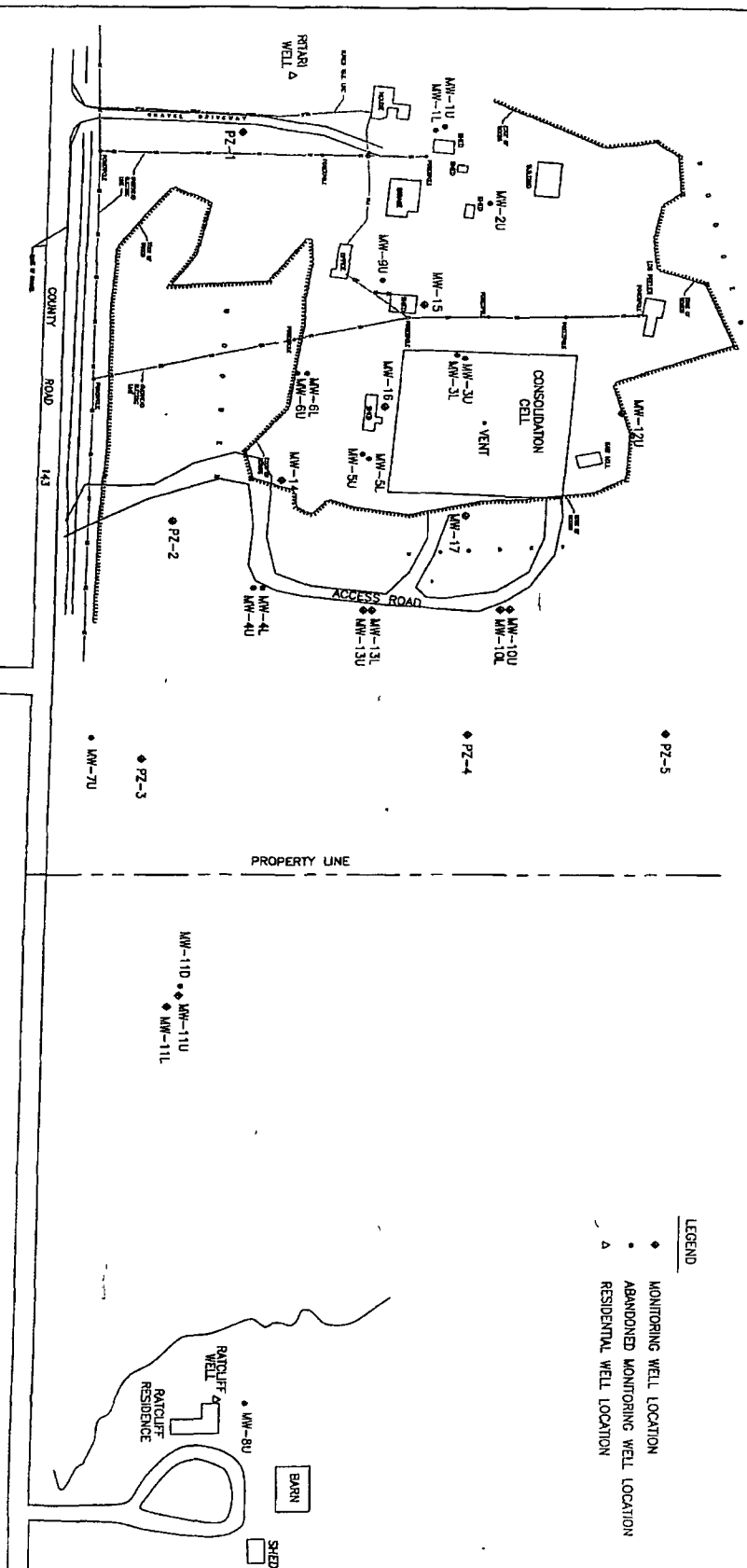
PROJECT NAME RITARI POST AND POLE— SEBEKA

TITLE SITE LOCATION MAP

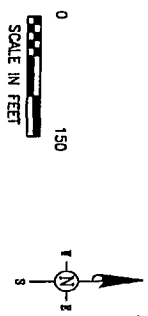
DWG. NO. 990455—TOPD

SCALE 1"=2000'

FIGURE # 1



- LEGEND**
- ♦ MONITORING WELL LOCATION
 - ABANDONED MONITORING WELL LOCATION
 - △ RESIDENTIAL WELL LOCATION



ENGR. E.B.	DATE	BAY WEST Inc ENVIRONMENTAL SERVICES
DRAWN K.M.	10/22/02	
REV. 9/4/03		ST PAUL, MN
PROJECT NAME: RTIARI POST & POLE - SEBEKA, MN		
TITLE: SITE MAP SHOWING CURRENT AND FORMER MONITORING WELL LOCATIONS		
DWG. NO. 030379-B7	SCALE 1"=150'	FIGURE # 2

LEGEND:

- PZ-1 THRU PZ-5 PIEZOMETER LOCATION
- R-1, R-2, R-3, WATER SUPPLY WELL
- ⊙ REMEDIAL INVESTIGATION MONITORING WELL LOCATION
- ELECTRICAL OVERHEAD LINES
- U UPPER AQUIFER WATER TABLE WELL
- L UPPER AQUIFER, BASE OF SURFICIAL SAND
- D DEEPER AQUIFER WELL SCREEN IN UPPER SATURATED SECTION
- ▨ AREA OF 232.8 TGD-GO CONTAMINATION ABOVE THE MCL OF 5.0 PPM IN UPPER PART OF UPPER AQUIFER WELLS
- ▤ AREA OF PCP CONTAMINATION ABOVE THE MCL OF 1.0 PPM IN LOWER PART OF UPPER AQUIFER WELLS

SOURCE REMEDIAL INVESTIGATION

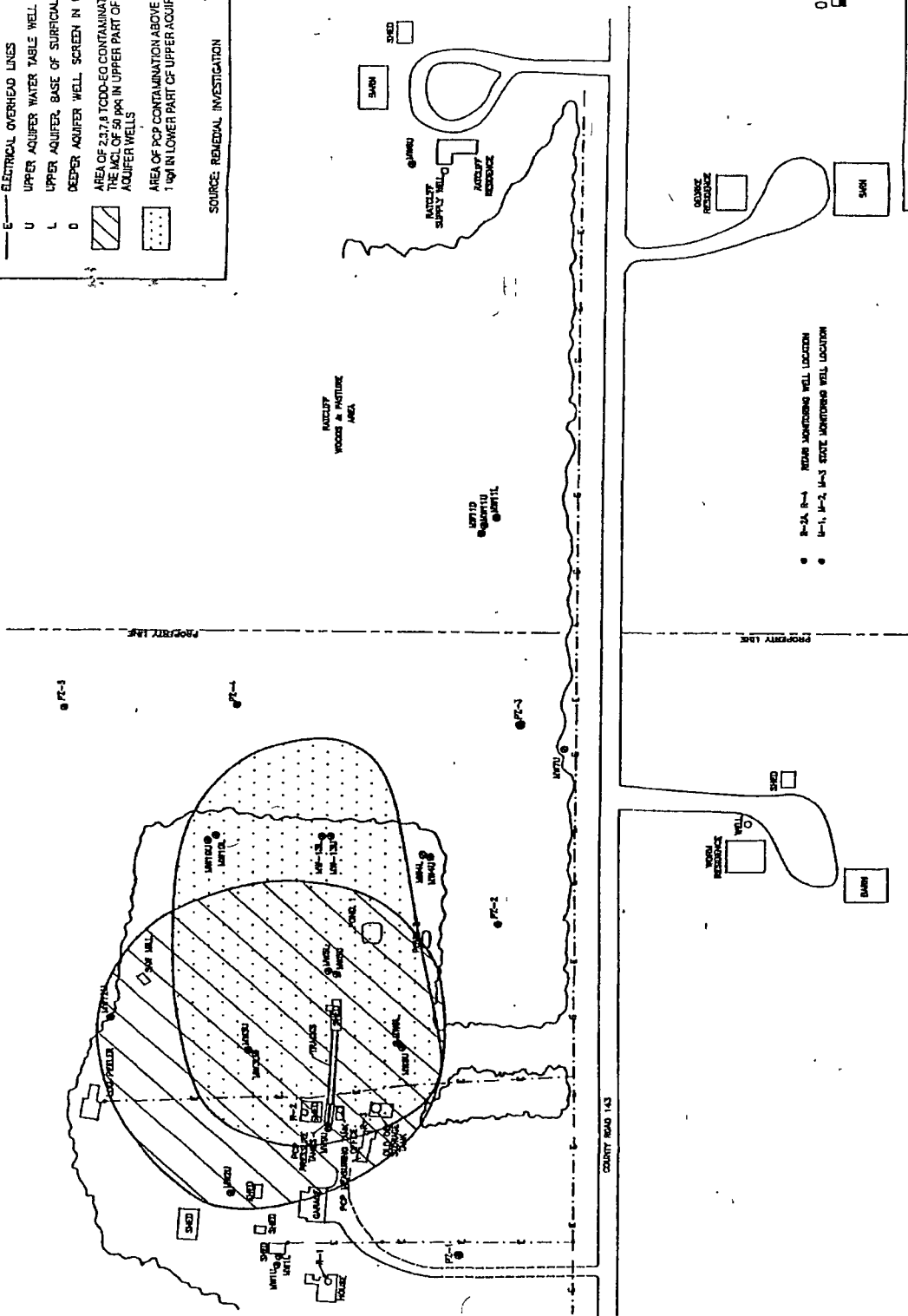
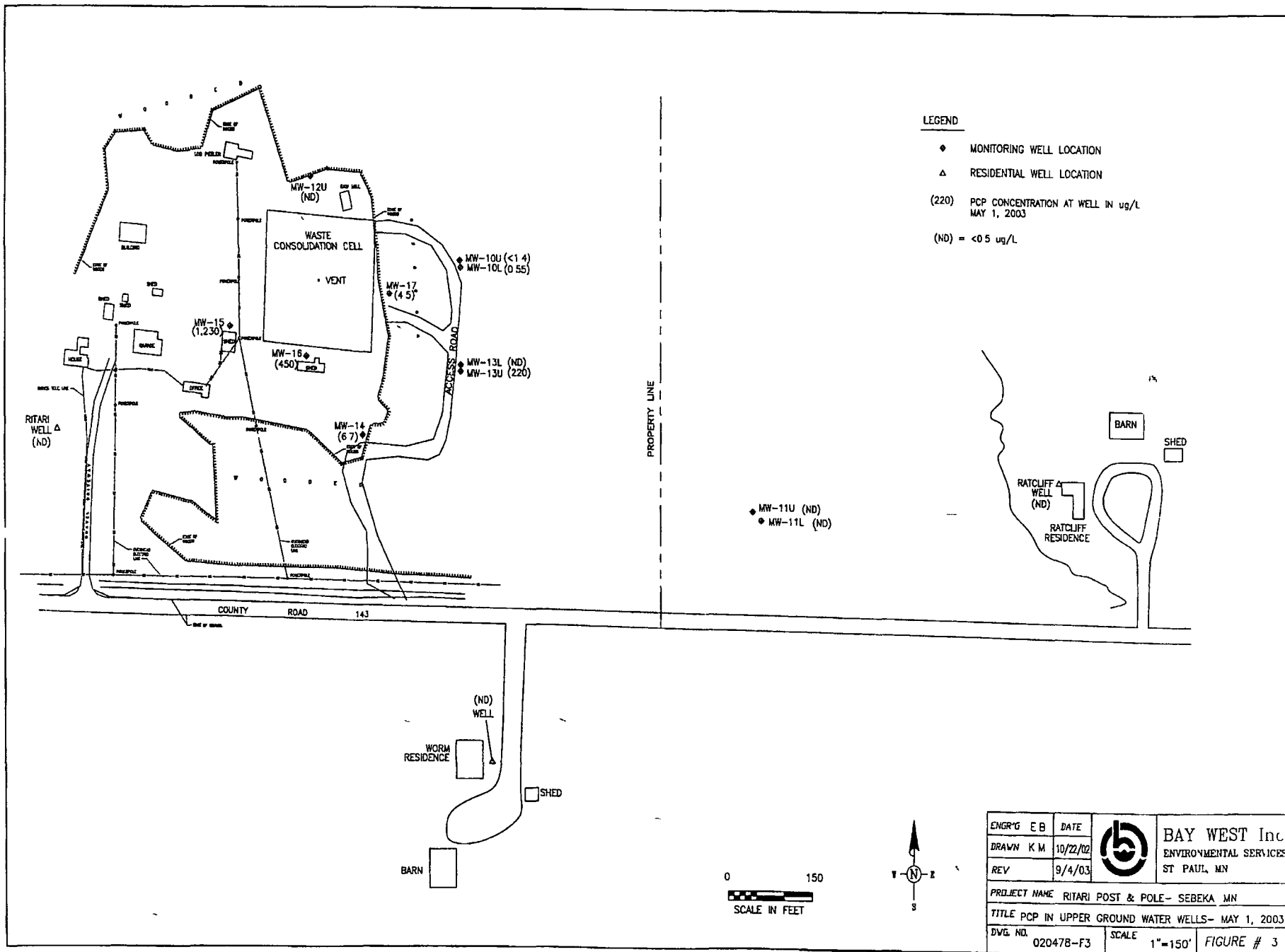


FIGURE 2-2
AERIAL EXTENT OF PCP AND
TODD-GO IN GROUND WATER
RITARI POST & POLE
SEBEKE, MINNESOTA

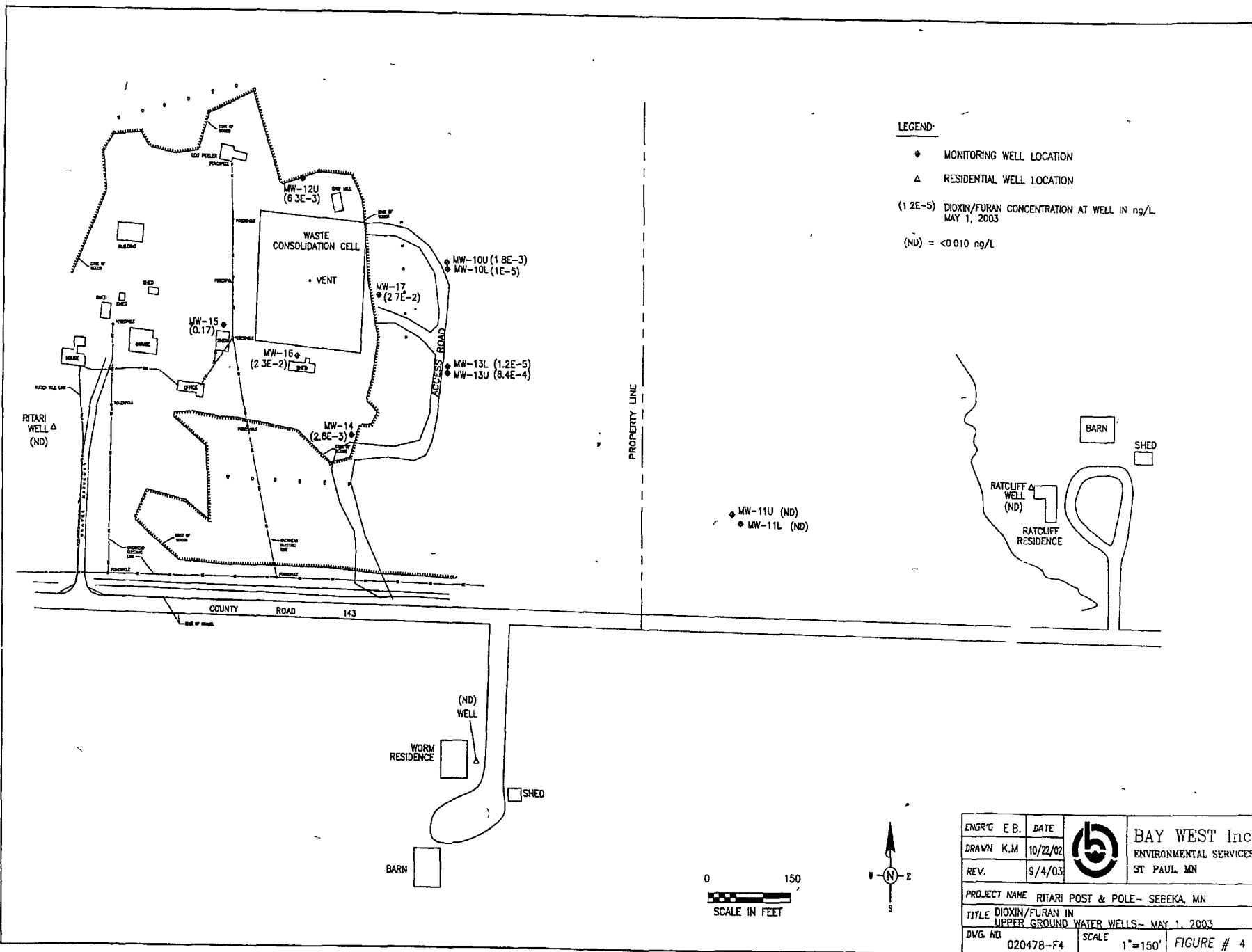
PROJECT NO. PREPARED BY REVIEWED BY			
11-80-801	800/50	FILE NAME	
DATE	REVISION NO.	90811-X	
7/14/93			

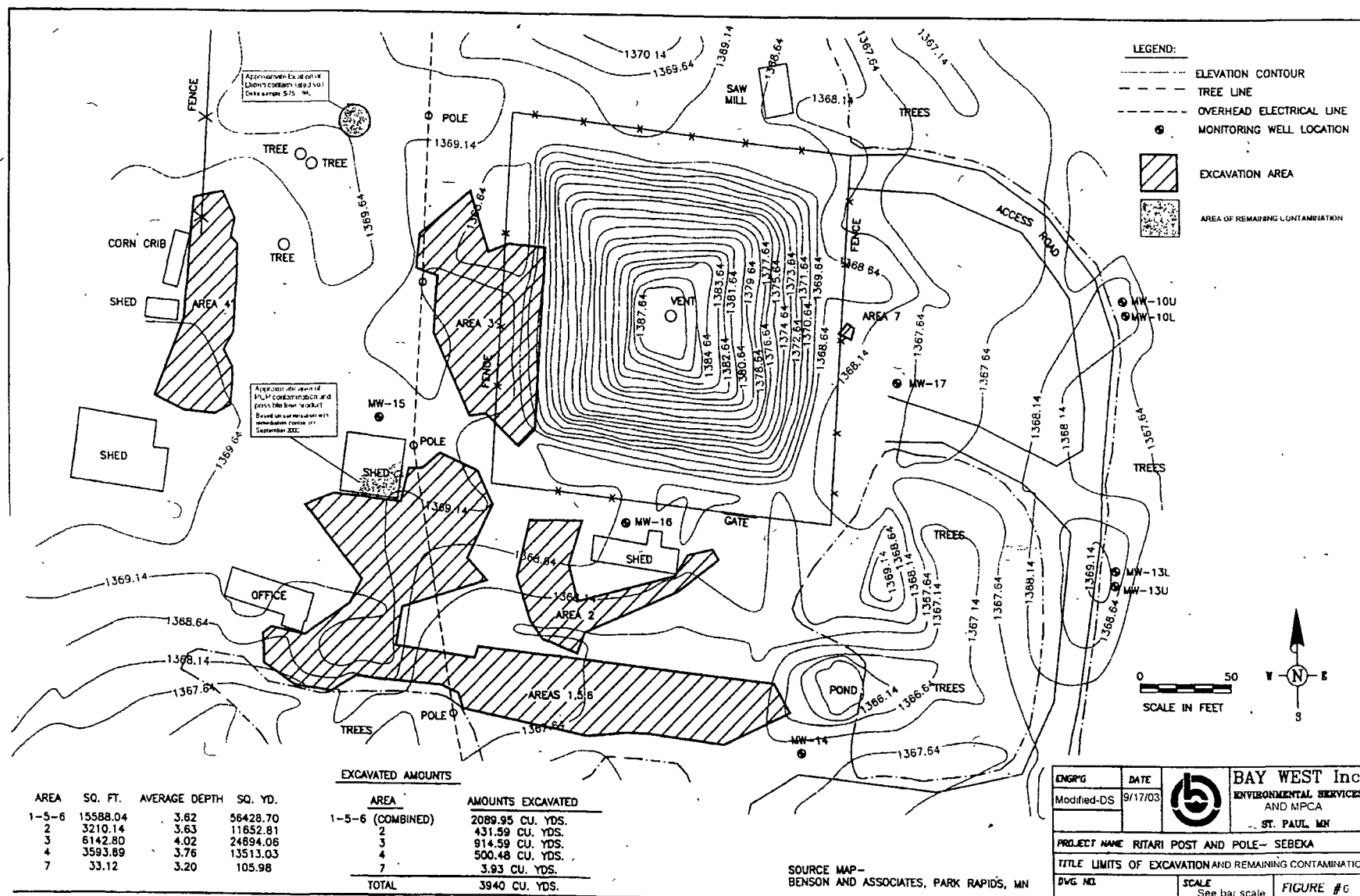


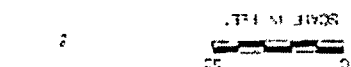
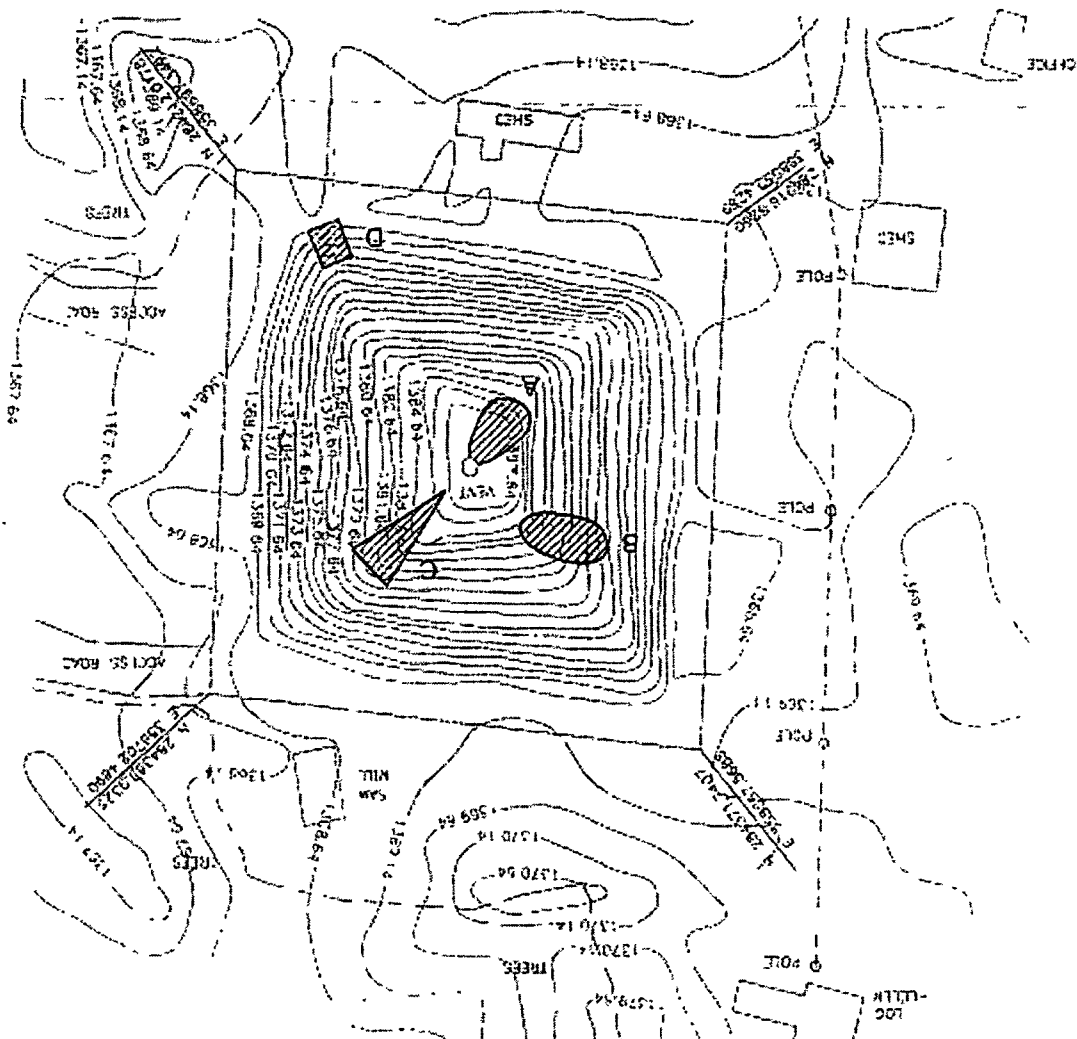


LEGEND:

- ◆ MONITORING WELL LOCATION
- △ RESIDENTIAL WELL LOCATION
- (1.2E-5) DIOXIN/FURAN CONCENTRATION AT WELL IN ng/L
MAY 1, 2003
- (ND) = <0.010 ng/L





[illegible]

Attachment 2
Community Notifications

NEWS RELEASE



Minnesota Pollution Control Agency

www.pca.state.mn.us

Toll-free and TDD 1 (800) 657-3864

Saint Paul • Brainerd • Detroit Lakes • Duluth • Mankato • Marshall • Rochester • Willmar

FOR RELEASE: AUGUST 25, 2003

MEDIA CONTACT: STEPHEN MIKKELSON (218) 855-50

PROJECT LEADER: MAUREEN JOHNSON (651) 296-70

ALL MPCA STAFF (VOICE AND TTY) (800) 657-38

PUBLIC INPUT SOUGHT FOR RITARI POST & POLE SUPERFUND SITE REVIEW

Brainerd, Minn.— The Minnesota Pollution Control Agency (MPCA) seeks public input on a required five-year review of the Ritari Post & Pole Superfund site. The U.S. Environmental Protection Agency (EPA) supports the site cleanup and is participating in the review. This periodic review of the ongoing remedial action is required where hazardous substances, pollutants, or contaminants remain, which, at this site, is caused by wood treating preservatives.

The purpose of the five-year review is to determine continued adequacy and protectiveness of the remaining ongoing remedial action and to evaluate whether the cleanup goals in the Site Record of Decision, as amended, remain protective of human health and the environment. The remedial action at this site included replacement of a drinking water well, restricting additional wells, monitoring to assure contaminated ground water does not migrate, and cleaning up the contaminated soils and buildings. The review will be completed by September 30, 2003.

-more-

Ritari Superfund – page 2

The community can contribute by providing information that may have been observed at the site or ways that the cleanup has helped the area. Local citizens are encouraged to bring information and any concerns related to the Site or requests for more information by August 28, 2002 to the attention of:

Stephen Mikkelsen, Information Officer	or	Maureen Johnson, Project Leader
Minnesota Pollution Control Agency		Minnesota Pollution Control Agency
520 Lafayette Road N.		
St. Paul, Minnesota 55155		
218-855-5001		651-296-7353
Toll-free 800-657-3864		Toll-free 800-657-3864

An EPA fact sheet is located on the internet at www.epa.gov/region5/superfund. Site documents are available for review at the Long Prairie City Offices, 42 3rd St. N., Long Prairie, Minn. These will provide more detail on the selected remedy.

The remedy addressed protecting public health and the environment by preventing ingestion of contaminants found in the ground water, and by cleaning up the contaminated soils and buildings. The contaminants are PCP in ground water and PCP and dioxin in the soils. The EPA removed 40 barrels in 1997, the EPA and MPCA replaced a drinking well and set up a monitoring system for the ground water in 2000, and consolidated the contaminated soils and materials under a cap in 2001.

Announcement of a Five-Year Review
for the
Ritari Post & Pole Superfund Site

The Minnesota Pollution Control Agency (MPCA) is conducting a Five-Year Review of the Ritari Post & Pole Superfund site (Site) cleanup, near Sebek, in Wadena County, Minnesota. The U.S. Environmental Protection Agency (EPA) supports the Site cleanup and is participating in the review. This periodic review of the remedial action is required where hazardous substances, pollutants, or contaminants remain, which is caused by wood treating preservatives at this Site.

The purpose of the Five-Year Review is to determine continued adequacy and protectiveness of the remedial action (containment and monitoring of the dioxin and pentachlorophenol (PCP) to assure people cannot come into contact with it) and to evaluate whether the cleanup goals in the Site Record of Decision, as amended, remain protective of human health and the environment. The review will be completed by September 30, 2003.

The community can contribute by providing information that may have been observed at the Site or ways that the cleanup has helped the area. Local citizens are encouraged to bring information and any concerns related to the Site or requests for more information by September 15, 2003 to the attention of either:

Stephen Mikkelsen, Information Officer
Minnesota Pollution Control Agency

218-855-5001
Toll-free 800-657-3864

or Maureen Johnson, Project Leader
Minnesota Pollution Control Agency
520 Lafayette Road N.,
St. Paul, Minnesota 55155
651-296-7353
Toll-free 800-657-3864

An EPA fact sheet is located at www.epa.gov/region5/superfund/npl. Site documents are available for review at the Wadena City Library, 304 1st St. SW, Wadena, MN. These will provide more detail on the selected remedy.

The remedy addressed protecting public health and the environment by preventing ingestion of contaminants found in the ground water, and by cleaning up the contaminated soils and buildings. The contaminants are PCP in ground water and PCP and dioxin in the soils. The EPA removed 40 barrels in 1997, the EPA and MPCA replaced a drinking well and set up a monitoring system for the ground water in 2000, and consolidated the sources of ground water contamination under a cap in 2001.

Attachment 3
List of Documents Reviewed

List of Documents Reviewed

- 1) *Focused Feasibility Study*, Delta Environmental Consultants, Inc ; October 28, 1993.
- 2) *Remedial Investigation Report*, Delta Environmental Consultants, Inc.; 1992.
- 3) *Record of Decision*; June 30, 1994
- 4) *Explanation of Significant Differences*, July 2, 1999
- 5) *Sampling and Analysis Plan for Soil Sampling*, Bay West, Inc.; October 19, 1999
- 6) *Groundwater Monitoring Report*, Bay West, Inc.; July 1, 2003
- 7) *Remedial Action Completion Report*, Bay West, Inc.; June 2003.
- 8) *Operation and Maintenance Plan*, Bay West, Inc., June 27, 2003.
- 9) *Quality Assurance Project Plan*, Bay West, Inc.; June 2003.

Attachment 4
Site Inspection Checklist, Interview Records and Site Photos

Site Inspection Checklist

Information in bold and italic font is Site-specific information.

I. SITE INFORMATION	
Site name: <i>Ritari Post and Pole Site</i>	Date of inspection: <i>August 21, 2003</i>
Location and Region: <i>Sebek, Minnesota; Region 5</i>	EPA ID: <i>MND980904064</i>
Agency, office, or company leading the five-year review: <i>MPCA, Bay West</i>	Weather/temperature: <i>Breezy, Upper 70's, Sunny</i>
Remedy Includes (Check all that apply) <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <i>Landfill cover/containment</i> <i>Access controls</i> <i>Institutional controls</i> Groundwater pump and treatment Surface water collection and treatment Other <u><i>Ground water monitoring</i></u> </div> <div style="width: 45%;"> Monitored natural attenuation Groundwater containment Vertical barrier walls </div> </div>	
Attachments: Inspection team roster <i>is attached here</i> <i>Site maps are in Attachment 1 to this five year review report</i>	
Inspection Team: <i>David Scheer, MPCA</i> <i>Ed Bacig, Bay West</i> <i>Alicia McNeil, Bay West</i>	
II. INTERVIEWS (Check all that apply)	
1 O&M site manager <i>Alicia McNeil</i> Project Manager <i>August 21, 2003</i> <div style="display: flex; justify-content: space-between; font-size: small;"> Name Title Date </div> Interviewed <i>at site</i> at office by phone Phone no <i>651-291-3435</i> Problems, suggestions, Report attached <u><i>Information included in this Site Inspection Checklist</i></u>	
2 O&M staff <i>Ed Bacig</i> Project Manager, Hydrogeologist <i>August 21, 2003</i> <div style="display: flex; justify-content: space-between; font-size: small;"> Name Title Date </div> Interviewed at site at office by phone Phone no <i>651-291-3414</i> Problems, suggestions, Report attached <u><i>Report attached to this Site Inspection Checklist</i></u>	

- 3 **Local regulatory authorities and response agencies** (i.e., State and Tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices, etc.) Fill in all that apply

Agency US EPA
Contact Jon Peterson Regional Project Manager September, 2003 312-353-1264
Name Title Date Phone no

Problems, suggestions, *In response to the protectiveness concerns, Jon suggested we extend the RA and the existing cooperative agreement to provide time and funds for the actions suggested in the Five Year Review recommendations to assure current and future protectiveness.*

Agency Meadow Township
Contact Ray Seibert Chairman September 3, 2003 218/837-5503
Name Title Date Phone no

Problems, suggestions, *Report attached*

Agency Wadena County
Contact Dave Mattila Commissioner September 4, 2003 218/837-5522
Name Title Date Phone no

Problems, suggestions, *Report attached*

Agency _____
Contact _____
Name Title Date Phone no

Problems, suggestions, *Report attached*

- 4 **Other interviews (optional)** *Reports attached at the end of this Checklist.*

Several unsuccessful attempts were made to interview the owner of the site, Glen Ritari. When we are able to speak with him, we will discuss the five-year review, inquire about any problems or suggestions, and work with him to implement the institutional controls

Thurman Ratcliff, neighbor and affected party

Dale Worms, neighbor

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)				
1	O&M Documents O&M manual As-built drawings Maintenance logs Remarks _____	<i>Readily available</i> <i>Readily available</i> <i>Readily available</i>	<i>Up to date</i> <i>Up to date</i> <i>Up to date</i>	N/A N/A N/A
2	Site-Specific Health and Safety Plan Contingency plan/emergency response plan Remarks _____	<i>Readily available</i> <i>Readily available</i>	<i>Up to date</i> <i>Up to date</i>	N/A N/A
3	O&M and OSHA Training Records Remarks _____	<i>Readily available</i>	<i>Up to date</i>	N/A
4	Permits and Service Agreements Air discharge permit Effluent discharge Waste disposal, POTW Other permits _____ Remarks _____	<i>Readily available</i> <i>Readily available</i> <i>Readily available</i> <i>Readily available</i>	<i>Up to date</i> <i>Up to date</i> <i>Up to date</i> <i>Up to date</i>	N/A N/A N/A N/A
5	Gas Generation Records Remarks _____	<i>Readily available</i>	<i>Up to date</i>	N/A
6	Settlement Monument Records Remarks _____	<i>Readily available</i>	<i>Up to date</i>	N/A
7	Groundwater Monitoring Records Remarks _____	<i>Readily available</i>	<i>Up to date</i>	N/A
8	Leachate Extraction Records Remarks _____	<i>Readily available</i>	<i>Up to date</i>	N/A
9	Discharge Compliance Records Air Water (effluent) Remarks _____	<i>Readily available</i> <i>Readily available</i>	<i>Up to date</i> <i>Up to date</i>	N/A N/A
10	Daily Access/Security Logs Remarks _____	<i>Readily available</i>	<i>Up to date</i>	N/A

IV. O&M COSTS																																							
1	O&M Organization State in-house _____ PRP in-house _____ Federal Facility in-house _____ Other _____	<i>Contractor for State</i> <i>Contractor for PRP</i> <i>Contractor for Federal Facility</i>																																					
2	O&M Cost Records <i>Readily available</i> _____ <i>Up to date</i> _____ Funding mechanism/agreement in place: <i>State MERLA superfund funding</i> Original O&M cost estimate <u>\$30,000 per year</u> <i>Breakdown attached here:</i> Cost estimate breakdown from ROD, Exhibits A and B, 1994, note RA completed 2001, 7 years later <table style="width: 100%; border: none;"> <tr> <td style="width: 40%;">1 yr Soils O&M</td> <td style="width: 20%;">\$10,000</td> <td style="width: 20%;">30 yr 5%</td> <td style="width: 20%;">\$153,725</td> </tr> <tr> <td>1 yr Ground Water Monitoring</td> <td>\$20,000</td> <td>30 yr, 5%</td> <td>\$307,449</td> </tr> <tr> <td style="text-align: right;">Total</td> <td>\$30,000</td> <td></td> <td>\$461,174</td> </tr> </table> <p style="text-align: center; margin-top: 10px;">Total annual cost by year for review period if available</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 20%;">From 7/1/2002</td> <td style="width: 20%;">To 6/30/2003</td> <td style="width: 20%;">\$25,943.31</td> <td style="width: 40%;"><i>Breakdown attached here:</i></td> </tr> <tr> <td style="text-align: center;">Date</td> <td style="text-align: center;">Date</td> <td style="text-align: center;">Total cost</td> <td></td> </tr> </table> <table style="width: 100%; border: none; margin-top: 10px;"> <tr> <td style="width: 30%;">Sampling</td> <td style="width: 20%;">3,379 78</td> <td style="width: 30%;"></td> <td style="width: 20%;"></td> </tr> <tr> <td>Soils inspection</td> <td>120 35 (completed in the next fiscal year, total planned is 331 73)</td> <td></td> <td></td> </tr> <tr> <td>Annual report</td> <td>2701 68</td> <td></td> <td></td> </tr> <tr> <td style="text-align: right;">Total</td> <td></td> <td>\$25,943 31</td> <td></td> </tr> </table>			1 yr Soils O&M	\$10,000	30 yr 5%	\$153,725	1 yr Ground Water Monitoring	\$20,000	30 yr, 5%	\$307,449	Total	\$30,000		\$461,174	From 7/1/2002	To 6/30/2003	\$25,943.31	<i>Breakdown attached here:</i>	Date	Date	Total cost		Sampling	3,379 78			Soils inspection	120 35 (completed in the next fiscal year, total planned is 331 73)			Annual report	2701 68			Total		\$25,943 31	
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Annual report	2701 68																																						
Total		\$25,943 31																																					
3	Unanticipated or Unusually High O&M Costs During Review Period Describe costs and reasons <i>Unusually high costs are not observed during this review period. The soils inspection was postponed to be conducted during the September 2003 five-year review.</i> <i>The previous annual costs used the state laboratory. This laboratory has a high level of QA, no longer needed for this site's analyses. Subsequent private laboratory data may be compared to it.</i> <i>A QAPP revision is planned to utilize a private laboratory at less cost in the next years.</i> <i>Additional contingency funding is planned for the minor soils cover repairs needed.</i> <i>Neither the 1994 ROD cost estimate nor this report includes the cost of state oversight.</i> _____ _____ _____																																						
V. ACCESS AND INSTITUTIONAL CONTROLS <i>Applicable</i> N/A																																							
A. Fencing																																							
1	Fencing damaged <i>Location shown on site map</i> <i>Gates secured</i> Remarks: <i>Fencing in good condition</i>	N/A																																					
B. Other Access Restrictions																																							
1	Signs and other security measures <i>Location shown on site map</i> Remarks: <i>Good Condition but not easily visible from road</i>	N/A																																					

C. Institutional Controls (ICs)				
1. Implementation and enforcement				
Site conditions imply ICs not properly implemented	Yes	<i>No</i>	N/A	
Site conditions imply ICs not being fully enforced	Yes	<i>No</i>	N/A	
Type of monitoring (e.g., self-reporting, drive by): <i>Groundwater monitoring and O & M visit</i>				
Frequency: <i>Semi-Annual</i>				
Responsible party/agency: <i>Bay West, Inc.</i>				
Contact:	<i>Alicia McNeil</i>	<i>Project Manager</i>	<i>8/21/03</i>	<i>(651) 291-3435</i>
	Name	Title	Date	Phone no.
Reporting is up-to-date	<i>Yes</i>	<i>No</i>	N/A	
Reports are verified by the lead agency	<i>Yes</i>	<i>No</i>	N/A	
Specific requirements in deed or decision documents have been met	<i>Yes</i>	<i>No</i>	N/A	
Violations have been reported	<i>Yes</i>	<i>No</i>	N/A	
Other problems or suggestions:				
2. Adequacy				
	<i>ICs are adequate</i>	ICs are inadequate	N/A	
Remarks				
D. General				
1. Vandalism/trespassing				
Location shown on site map	<i>No vandalism evident</i>			
Remarks				
2. Land use changes on site				
	<i>N/A</i>			
Remarks				
3. Land use changes off site				
	<i>N/A</i>			
Remarks				
VI. GENERAL SITE CONDITIONS				
A. Roads				
	<i>Applicable</i>	N/A		
1. Roads damaged				
Location shown on site map	<i>Roads adequate</i>		N/A	
Remarks				

B. Other Site Conditions			
Remarks: <i>Vegetation has grown across the site in the areas of former excavation</i>			
VII. LANDFILL COVERS <i>Applicable</i> N/A			
A. Landfill Surface			
1.	Settlement (Low spots) Areal extent _____ Remarks _____	Location shown on site map Depth _____	Settlement not evident
2.	Cracks Lengths: <i>6 feet</i> Remarks: <i>Possibly linked to gopher holes (see Photo)</i>	Location shown on site map Widths: <i>1 inch</i>	Cracking not evident Depths: <i>6 inches</i>
3.	Erosion Areal extent: <i>Random locations</i> Remarks: <i>Some slight erosion where the grass is sparse, but nothing significant (4 areas; see Photos)</i>	Location shown on site map Depth: <i>Minimal</i>	Erosion not evident
4.	Holes Areal extent: <i>Random locations</i> Remarks: <i>Random animal burrowing holes along cap surface</i>	Location shown on site map Depth: <i>Few inches</i>	Holes not evident
5.	Vegetative Cover Trees/Shrubs (indicate size and locations on a diagram) Remarks: <i>Vegetative cover growing on cap surface; four sparse areas (coinciding with slight erosion areas). While on-Site, pulled large weeds with tap-roots.</i>	Grass Cover properly established	No signs of stress
6.	Alternative Cover (armored rock, concrete, etc.) N/A Remarks _____		
7.	Bulges Areal extent _____ Remarks _____	Location shown on site map Height _____	Bulges not evident
8.	Wet Areas/Water Damage Wet areas Ponding Seeps Soft subgrade Remarks _____	Wet areas/water damage not evident Location shown on site map Areal extent _____ Location shown on site map Areal extent _____ Location shown on site map Areal extent _____ Location shown on site map Areal extent _____	
9.	Slope Instability Areal extent _____ Remarks _____	Slides Location shown on site map	No evidence of slope instability

B. Benches Applicable <i>N/A</i> (Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel)			
1	Flows Bypass Bench Remarks _____	Location shown on site map	N/A or okay
2	Bench Breached Remarks _____	Location shown on site map	N/A or okay
3	Bench Overtopped Remarks _____	Location shown on site map	N/A or okay
C. Letdown Channels Applicable <i>N/A</i> (Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies)			
1	Settlement Areal extent _____ Depth _____ Remarks _____	Location shown on site map	No evidence of settlement
2	Material Degradation Material type _____ Areal extent _____ Remarks _____	Location shown on site map	No evidence of degradation
3	Erosion Areal extent _____ Depth _____ Remarks _____	Location shown on site map	No evidence of erosion
4	Undercutting Areal extent _____ Depth _____ Remarks _____	Location shown on site map	No evidence of undercutting
5	Obstructions Type _____ Location shown on site map Areal extent _____ Size _____ Remarks _____		No obstructions
6	Excessive Vegetative Growth Type _____ No evidence of excessive growth Vegetation in channels does not obstruct flow Location shown on site map Areal extent _____ Remarks _____		

D. Cover Penetrations <i>Applicable</i> <i>N/A</i>				
1	Gas Vents	Active <i>Passive</i>		
	Properly secured/locked	Functioning	Routinely sampled	Good condition
	Evidence of leakage at penetration		Needs Maintenance	<i>N/A</i>
	Remarks _____			
2	Gas Monitoring Probes			
	Properly secured/locked	Functioning	Routinely sampled	Good condition
	Evidence of leakage at penetration		Needs Maintenance	<i>N/A</i>
	Remarks _____			
3	Monitoring Wells (within surface area of landfill)			
	Properly secured/locked	Functioning	Routinely sampled	Good condition
	Evidence of leakage at penetration		Needs Maintenance	<i>N/A</i>
	Remarks _____			
4	Leachate Extraction Wells			
	Properly secured/locked	Functioning	Routinely sampled	Good condition
	Evidence of leakage at penetration		Needs Maintenance	<i>N/A</i>
	Remarks _____			
5	Settlement Monuments	Located	Routinely surveyed	<i>N/A</i>
	Remarks _____			
E. Gas Collection and Treatment <i>Applicable</i> <i>N/A</i>				
1	Gas Treatment Facilities			
	Flaring	Thermal destruction	Collection for reuse	
	Good condition	Needs Maintenance		
	Remarks _____			
2	Gas Collection Wells, Manifolds and Piping			
	Good condition	Needs Maintenance		
	Remarks _____			
3	Gas Monitoring Facilities (e.g., gas monitoring of adjacent homes or buildings)			
	Good condition	Needs Maintenance	<i>N/A</i>	
	Remarks _____			
F. Cover Drainage Layer <i>Applicable</i> <i>N/A</i>				
1	Outlet Pipes Inspected	Functioning	<i>N/A</i>	
	Remarks _____			
2	Outlet Rock Inspected	Functioning	<i>N/A</i>	
	Remarks _____			

G. Detention/Sedimentation Ponds		Applicable	N/A
1.	Siltation Areal extent _____ Depth _____ <input type="checkbox"/> Siltation not evident Remarks _____		N/A
2.	Erosion Areal extent _____ Depth _____ Erosion not evident Remarks _____		
3.	Outlet Works Functioning _____ Remarks _____	N/A	
4.	Dam Functioning _____ Remarks _____	N/A	
H. Retaining Walls		Applicable	N/A
1.	Deformations Location shown on site map _____ Deformation not evident. Horizontal displacement _____ Vertical displacement _____ Rotational displacement _____ Remarks _____		
2.	Degradation Location shown on site map _____ Degradation not evident Remarks _____		
I. Perimeter Ditches/Off-Site Discharge		Applicable	N/A
1.	Siltation Location shown on site map _____ Siltation not evident Areal extent _____ Depth _____ Remarks _____		
2.	Vegetative Growth Location shown on site map _____ N/A Vegetation does not impede flow Areal extent _____ Type _____ Remarks _____		
3.	Erosion Location shown on site map _____ Erosion not evident Areal extent _____ Depth _____ Remarks _____		
4.	Discharge Structure Functioning _____ Remarks _____	N/A	
VIII. VERTICAL BARRIER WALLS		Applicable	N/A
1.	Settlement Location shown on site map _____ Settlement not evident Areal extent _____ Depth _____ Remarks _____		

2	Performance Monitoring Type of monitoring _____ Performance not monitored Frequency _____ Evidence of breaching Head differential _____ Remarks _____		
IX. GROUNDWATER/SURFACE WATER REMEDIES <i>Applicable</i> <i>N/A</i>			
A. Groundwater Extraction Wells, Pumps, and Pipelines <i>Applicable</i> <i>N/A</i>			
1	Pumps, Wellhead Plumbing, and Electrical Good condition All required wells properly operating Needs Maintenance <i>N/A</i> Remarks _____		
2	Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances Good condition Needs Maintenance Remarks _____		
3	Spare Parts and Equipment Readily available Good condition Requires upgrade Needs to be provided Remarks _____		
B. Surface Water Collection Structures, Pumps, and Pipelines <i>Applicable</i> <i>N/A</i>			
1	Collection Structures, Pumps, and Electrical Good condition Needs Maintenance Remarks _____		
2	Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances Good condition Needs Maintenance Remarks _____		
3	Spare Parts and Equipment Readily available Good condition Requires upgrade Needs to be provided Remarks _____		
C. Treatment System <i>Applicable</i> <i>N/A</i>			
1	Treatment Train (Check components that apply) Metals removal Oil/water separation Bioremediation Air stripping Carbon adsorbers Filters _____ Additive (e.g., chelation agent, flocculent) _____ Others _____ Good condition Needs Maintenance Sampling ports properly marked and functional Sampling/maintenance log displayed and up to date Equipment properly identified Quantity of groundwater treated annually _____ Quantity of surface water treated annually _____ Remarks _____		
2	Electrical Enclosures and Panels (properly rated and functional) <i>N/A</i> Good condition Needs Maintenance Remarks _____		

3.	Tanks, Vaults, Storage Vessels			
	N/A	Good condition	Proper secondary containment	Needs Maintenance
	Remarks			
4.	Discharge Structure and Appurtenances			
	N/A	Good condition	Needs Maintenance	
	Remarks			
5.	Treatment Building(s)			
	N/A	Good condition (esp. roof and doorways)		Needs repair
	Chemicals and equipment properly stored			
	Remarks			
6.	Monitoring Wells (pump and treatment remedy)			
	Properly secured/locked	Functioning	Routinely sampled	Good condition
	All required wells located	Needs Maintenance	N/A	
	Remarks			
D. Monitoring Data				
1.	Monitoring Data			
	<i>Is routinely submitted on time</i>		<i>Is of acceptable quality</i>	
2.	Monitoring data suggests:			
	<i>Groundwater plume is effectively contained at this time.</i>		<i>Contaminant concentrations are increasing at several points</i>	
D. Monitored Natural Attenuation				
1.	Monitoring Wells (natural attenuation remedy)			
	<i>Properly secured/locked</i>	<i>Functioning</i>	<i>Routinely sampled</i>	<i>Good condition</i>
	<i>All required wells located</i>	Needs Maintenance	N/A	
	Remarks: <i>Old wells (not on current monitoring list) are not labeled with Unique Well Numbers but are labeled according to monitoring location. Three piezometers are also on the east side of the property but are not currently in use.</i>			
X. OTHER REMEDIES				
N/A				
If there are remedies applied at the site which are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.				
XI. OVERALL OBSERVATIONS				
A. Implementation of the Remedy				
<p>Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).</p> <p><i>The groundwater remedy is to prevent ingestion of contaminated groundwater in excess of applicable drinking water standards and to prevent migration of contaminated groundwater to downgradient users. The groundwater remedy includes semi-annual groundwater monitoring which is currently functioning as intended.</i></p> <p><i>The soil remedy is to contain contaminated soils and debris under a RCRA compliant cap after demolition or dismantling of necessary structures and equipment. The remedy is currently functioning as intended.</i></p> <p><i>Aside from remaining impacted soil near the two sheds southwest of the cap and at soil sample location S75, the soil and groundwater remedies are functioning as intended by the ROD, as modified by the ESD</i></p>				

B. Adequacy of O&M
<p>Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.</p> <p><i>Site O&M activities were performed during the most recent sampling event on April 30 and May 1, 2003 and during this Site inspection for the five-year review. During this inspection, as noted previously, there were areas of sparse vegetation/minor erosion and animal burrows/cracks in the surface of the topsoil on the cap. Future O&M activities should include re-seeding of the sparsely vegetated areas as well as raking out and repairing animal burrows and cracks on the surface. The remaining O&M activities are adequate for the Site.</i></p>
C. Early Indicators of Potential Remedy Problems
<p>Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs that suggest that the protectiveness of the remedy may be compromised in the future.</p> <p><i>There are currently no indicators of potential remedy problems.</i></p>
D. Opportunities for Optimization
<p>Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.</p> <p><i>None observed at this time.</i></p>

Site Interview Records

O & M Contractor Interview Record

Site Name: Ritari Post & Pole

EPA ID No.: MND980904064

Subject: Site Visit/Interview

Time: 10:30 am

Date: 8/21/03

Type of Contact: ☐ Telephone

☒ Visit

☐ Other

Location of Interview: Ritari Post & Pole Site

Contact Made By:

Name: Dave Scheer

Title: Hydrogeologist

Organization: MPCA

Individual Contacted:

Name: Ed Bacig

Title: Project Manager

Organization: Bay West, Inc.

Relation to the Site: Site Operation & Maintenance Contractor

Telephone No.: 651-291- 0456

Street Address: 5 Empire Drive

Facsimile No.: 651-291-0099

City: St. Paul

E-Mail Address: edb@baywest.com

State: Minnesota

Zip Code: 55103

Summary of Conversation:

1. What is your overall impression of the project?

The project appears to be going well overall. However, several of the building that were left standing did not allow all of the contaminated soil to be excavated and placed under the RCRA compliant cap which has allowed some of the contaminants to continue to leach to the ground water.

2. Is the remedy functioning as expected? How well is the remedy performing?

The remedy appears to be functioning as expected. Except as noted above, the consolidation and capping of the waste on the site has reduced the overall risk to human health and the environment. However, as noted during the 5-year review site inspection several areas of the cap have reduced vegetation and several other areas show signs of animal burrows. It does not appear that these areas of disturbance in the topsoil of the cap have affected the integrity of the cap.

3. What does the monitoring data show? Are there any trends that show contaminant levels are decreasing? If so, please give details.

In general, PCP concentrations in groundwater have gradually decreased over time. Two residential wells, the new Ratcliff well and the Ritani well, have been monitored since 1979 and 1980, respectively. In each well, concentrations were the highest in the early 1980's and decreased to levels of non-detection in 1996. Neither well has increased above the detection limit for PCP, 0.5 µg/L, since that time. Additionally, the Wormi well as well as MW-11U and MW-11L have not been detected above the detection limit for PCP since 1996.

Two monitoring wells, MW-10U and MW-13U, were at or near 900 µg/L in the early 1990's but have since dramatically decreased. In 2003, MW-10U has decreased to <1.4 µg/L while MW-13U experienced an increase to 220 µg/L. MW-13L has also decreased from 6.9 µg/L in 1996 to the level of detection (0.5 µg/L) in 2003. Three monitoring wells, MW-12U, MW-14 and MW-17, have been monitored since January 2001. Each of these three wells has decreased significantly after the remedy completion in October 2001. The remaining three of the fourteen groundwater monitoring wells, MW-16, MW-15 and MW-10L, have each increased in PCP concentration since January 2001. MW-10L has increased only slightly above the detection limit, while MW-15 and MW-16 have each increased significantly.

Groundwater monitoring for dioxins began in April 2003. Dioxins, measured as 2,3,7,8-TCDD Equivalents, was detected in 9 of the 14 samples collected from the site monitoring wells, as shown in Table 1. The detections ranged from 1.00×10^{-5} ng/L in MW-10L to 0.17 ng/L in MW-15. The three residential wells did not have dioxin detections above 0.00 ng/L during this sampling event.

As described in the ROD, the Site does not have defined groundwater clean-up criteria since the Maximum Contaminant Levels (MCLs) may or may not be applicable to the Site. Subsequently, the MCLs are used for comparative purposes only. As shown in the Table below, the MCLs for PCP and Dioxin/Furan compounds are 1.0 µg/L and 30 pg/L (or .030 ng/L), respectively. As the above results indicate, five of the six monitoring wells with PCP detections currently exceed the MCL for PCP at this site. PCP was not detected in MW-10U; however, due to a raised detection limit for this sample, this concentration of 1.4 µg/L is also above the MCL. Similarly, one (MW-15) of the nine wells with Dioxin/Furan detections currently exceed the MCL for Dioxin/Furan at this site.

Table
Groundwater Analytical Results

Parameter	PCP (µg/L)		Dioxin/Furan (as 2,3,7,8-TCDD Equivalents) (ng/L)
MCL	1.0		.030
Sample Date	October 2001	May 2003	May 2003
Ratcliff Well	<0.5	<0.5	0.00
Worm Well	<0.5	<0.5	0.00
Ritari Well	<0.5	<0.5	0.00
MW-10L	<0.5	0.55	1x10 ⁻⁵
MW-11L	<0.5	<0.5	0.00
MW-11U	<0.5	<0.5	0.00
MW-13L	<0.5	<0.5	1.2x10 ⁻⁵
MW-12U	<0.5	<0.5	6.3x10 ⁻³
MW-15	3.1	1,230	0.17
MW-10U	18	<1.4	1.8x10 ⁻³
MW-17	25	4.5	2.7x10 ⁻²
MW-13U	42	220	8.4x10 ⁻⁴
MW-14	53	6.7	2.8x10 ⁻³
MW-16	190	450	2.3x10 ⁻²

Note – Bold results indicate exceedance of MCL

The increase in PCP concentration and the dioxin compounds detected in MW-15 and MW-16 are likely a result of the remaining impacted soil in the vicinity of the two sheds at the site. As requested by the MPCA, these source areas were not addressed during the Remedial Action in order to allow the property owner to retain use of the sheds. Therefore, the impacted soil in these areas will gradually equilibrate with the surrounding soil and groundwater over time, resulting in increased PCP and dioxin concentrations observed in MW-15 and MW-16. Similarly, since MW-13U is down gradient of MW-15 and MW-16, it may already be showing the effects of this residual contamination migrating through the groundwater across the Site.

4. Is there a continuous on-site O&M presence? If so, please describe the staff and activities. If there is not a continuous on-site presence, please describe staff and frequency of site inspections and activities.

There is not a continuous on-site O&M presence at the site. The site is inspected on a semi-annual basis during the scheduled groundwater

monitoring sampling events. O&M activities are conducted in accordance with the site O&M manual.

5. Have there been any significant changes in the O&M requirements, maintenance schedules, or sampling routines since start-up or in the last five years? If so, do they affect the protectiveness of the remedy? Please describe the changes and impacts.

Site O&M activities have been the same since the completion of the remedial action in October 2001. Prior to this O&M activities consisted of ground water sampling which was completed by the MPCA.

6. Have there been unexpected O&M difficulties or costs at the site since start up or in the last five years? If so, please give details.

There have been no unexpected O&M difficulties or costs at the site since start up.

7. Have there been opportunities to optimize O&M, or sampling efforts? Please describe changes and resultant or desired cost savings or improved efficiency.

Site O&M activities are conducted in conjunction with the semi-annual ground water sampling events, which has resulted in a small savings (\$600) to the project by reducing the need for a separate mobilization to the site for O&M activities.

8. Do you have any comments, suggestions, or recommendations regarding the project?

Evaluate if building demolition and additional soil excavation is necessary to prevent continued leaching of PCP to the ground water as noted in Item 1 of this questionnaire. Reseed and repair several areas of the cap that have reduced vegetation and/or areas that show signs of animal burrows.

Community Representatives Interview Record

Site Name: *Ritari Post and Pole*

EPA ID No.:

Subject: *5 year review*

Time: *12:30 PM*

Date: *8/21/03*

Type of Contact: ☐ Telephone

☒ Visit

☐ Other

Location of Interview: *Ratcliff Farm*

Contact Made By:

Name: *Dave Scheer*

Title: *Hydrogeologist*

Organization: *MPCA*

Individual Contacted:

Name: *Thurman Ratcliff*

Title: *Farmer*

Organization:

Relation to the Site: *Neighbor to site and affected party.*

Telephone No.: *218/837-5573*

Street Address: *16580 300th Street*

Facsimile No.:

City: *Sebeka*

E-Mail Address:

State: *MN*

Zip Code: *56477*

Summary of Conversation:

9. What is your overall impression of the project?
Paid no mind to it.
10. What effects have site operations had on the surrounding community?
Not aware of any.
11. Are you aware of any community concerns regarding the site or its operation and administration?
No.
If so, please give details. NA
12. Are you aware of any events, incidents, or activities at the site such as vandalism, trespassing, or emergency responses from local authorities?
No.
If so, please give details. NA
13. Do you feel well informed about the site's activities and progress?
Yes.
14. Do you have any comments, suggestions, or recommendations regarding the site's management or operation?
I Lost 40 Sows, 2-3 Boars and 200 pigs because of contamination on my property and in my well. We had 550 pounds of hog meat that was in the freezer that had to be thrown away. I had vet bills and drilled a new well on account of the contamination.

Community Representatives Interview Record

Site Name: *Ritari Post and Pole* EPA ID No.:
Subject: *Ritari Superfund 5 year review* Time: *12:57* Date: *8/21/03*
Type of Contact: ☐ Telephone ☒ Visit ☐ Other
Location of Interview: *Dale Worms Farm*
Contact Made By:
Name: *Dave Scheer* Title: *Hydrogeologist* Organization: *MPCA*

Individual Contacted:

Name: *Dale Worms* Title: *Farmer* Organization: **
Relation to the Site: *Neighbor to the South*
Telephone No.: *218/837-5081* Street Address: *16361 300th Street*
Facsimile No.: City: *Sebeka*
E-Mail Address: State: *MN*
Zip Code: *56477*

Summary of Conversation:

15. What is your overall impression of the project? *It's a joke. Couldn't find nothing except on site. Bullshit solutions were proposed to haul and burn. Everything stayed on the site.*
16. What effects have site operations had on the surrounding community?
Some of the equipment on the road would block my driveway.
17. Are you aware of any community concerns regarding the site or its operation and administration? *Why do the work if not a busy site. If things are different than that nobody told us.*
- If so, please give details. *NA*
18. Are you aware of any events, incidents, or activities at the site such as vandalism, trespassing, or emergency responses from local authorities?
No. Just authorized vehicles.
- If so, please give details. *NA*
19. Do you feel well informed about the site's activities and progress?
Remedies that were proposed before, excavation incineration and land treatment, then everything changed. We were not informed about the new remedy until excavation and stockpiling was already taking place. They talked about using our equipment and then spreading on our property then they didn't do that.
20. Do you have any comments, suggestions, or recommendations regarding the site's management or operation?
No, everything is fine.

State and Local Representatives Interview Record

Site Name: Ritari Post and Pole

Subject: Five Year Review

Time: 16:00

Date: 9/3/03

Type of Contact: ☒ Telephone

☐ Visit

☐ Other

Location of Interview: MPCA, St. Paul

Contact Made By:

Name: Dave Scheer

Title: Hydrogeologist

Organization: MPCA

Individual Contacted:

Name: Ray Seibert

Title: Chairman

Organization: Meadow Township

Relation to the Site: Township Supervisor

Telephone No.: 218/837-5503

Street Address: 18009 300th Street

Facsimile No.:

City: Sebeka

E-Mail Address:

State: MN

Zip Code: 56477

Summary of Conversation:

21. What is your overall impression of the project?

Seems like a lot of overkill.

22. Have there been routine communications or activities (site visits, inspections, reporting activities, etc.) conducted by your office regarding the site?

No.

If so, please give purpose and results. NA

23. Have there been any complaints, violations, or other incidents related to the site requiring a response by your office?

No.

If so please give details of the events and results of the responses. NA

24. Are you aware of any events, incidents, or activities at the site such as vandalism, trespassing, or emergency responses from local authorities? If so, please give details.

No.

25. Do you feel well informed about the site's activities and progress?

Yes. They told us what they were going to do and they did it.

26. Do you have any comments, suggestions, or recommendations regarding the site's management or operation?

No.

State and Local Representatives Interview Record

Site Name: Ritari Post and Pole
Subject: Ritari Five Year Review
Type of Contact: ☒ Telephone ☐ Visit
Location of Interview: MPCA Office, St. Paul

EPA ID No.:

Time: 8:20

Date: 9/4/2003

☐ Other

Name: Dave Scheer
Contact Made By: Title: Hydrogeologist
Organization: MPCA

Individual Contacted:

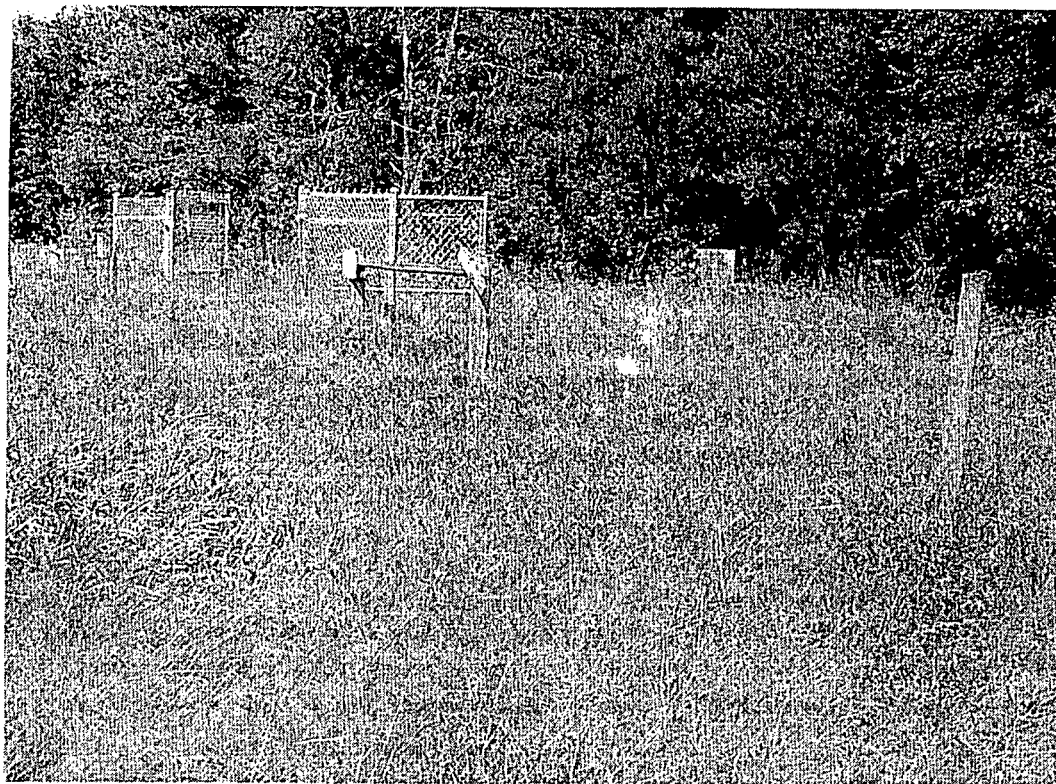
Name: Dave Mattila Title: Commissioner Organization: Wadena County
Relation to the Site: Neighbor and County Board
Telephone No.: 218/837-5522 Street Address: 14696 300th Street
Facsimile No.: City: Sebeka
E-Mail Address: State: MN
Zip Code: 56477

Summary of Conversation:

27. What is your overall impression of the project?
Somebody got screwed on it. Not necessarily on the clean up on it. Ritari had to drill new wells for Ratcliff. Ratcliff claimed the cattle wouldn't drink the water. It doesn't add up.
28. Have there been routine communications or activities (site visits, inspections, reporting activities, etc.) conducted by your office regarding the site? If so, please give purpose and results.
No.
29. Have there been any complaints, violations, or other incidents related to the site requiring a response by your office?
No.
If so please give details of the events and results of the responses. *NA*
30. Are you aware of any events, incidents, or activities at the site such as vandalism, trespassing, or emergency responses from local authorities?
No.
If so, please give details. *NA*
31. Do you feel well informed about the site's activities and progress?
No. We were told what they were going to do. We heard about the bids, then nothing.
32. Do you have any comments, suggestions, or recommendations regarding the site's management or operation?
No, I do not know what they are doing.



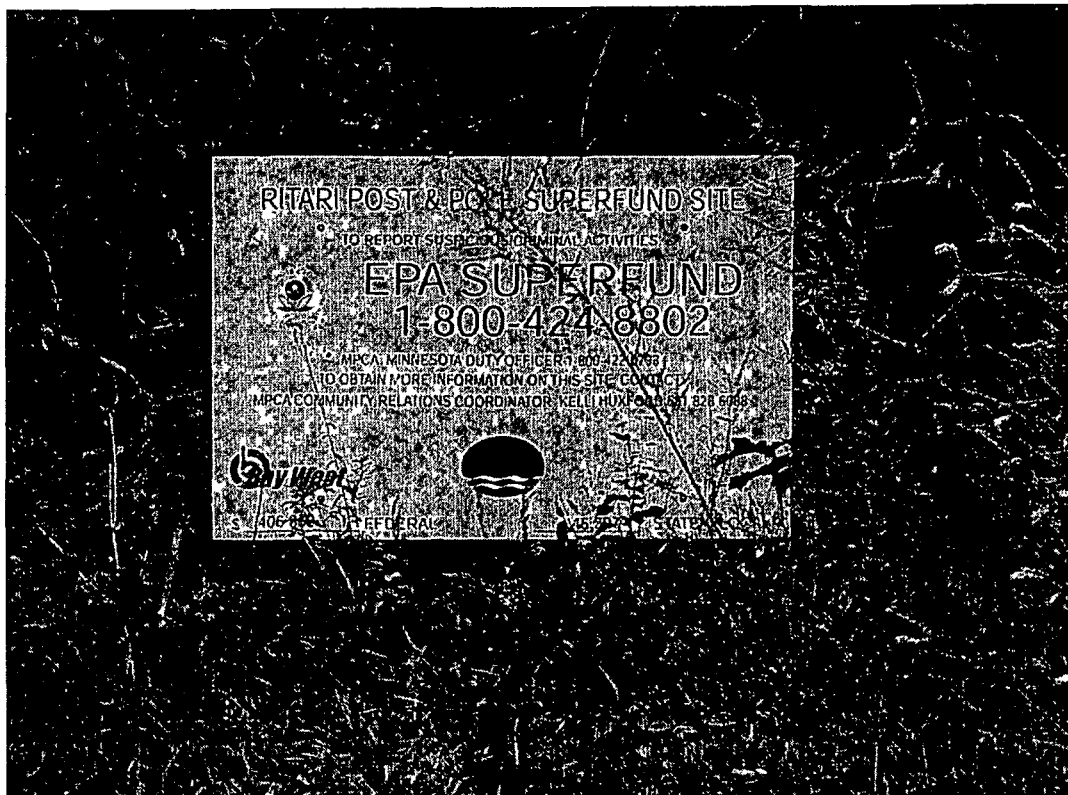
1) View of access gate from County Road 143.



2) View of access gate and identification sign from County Road 143.



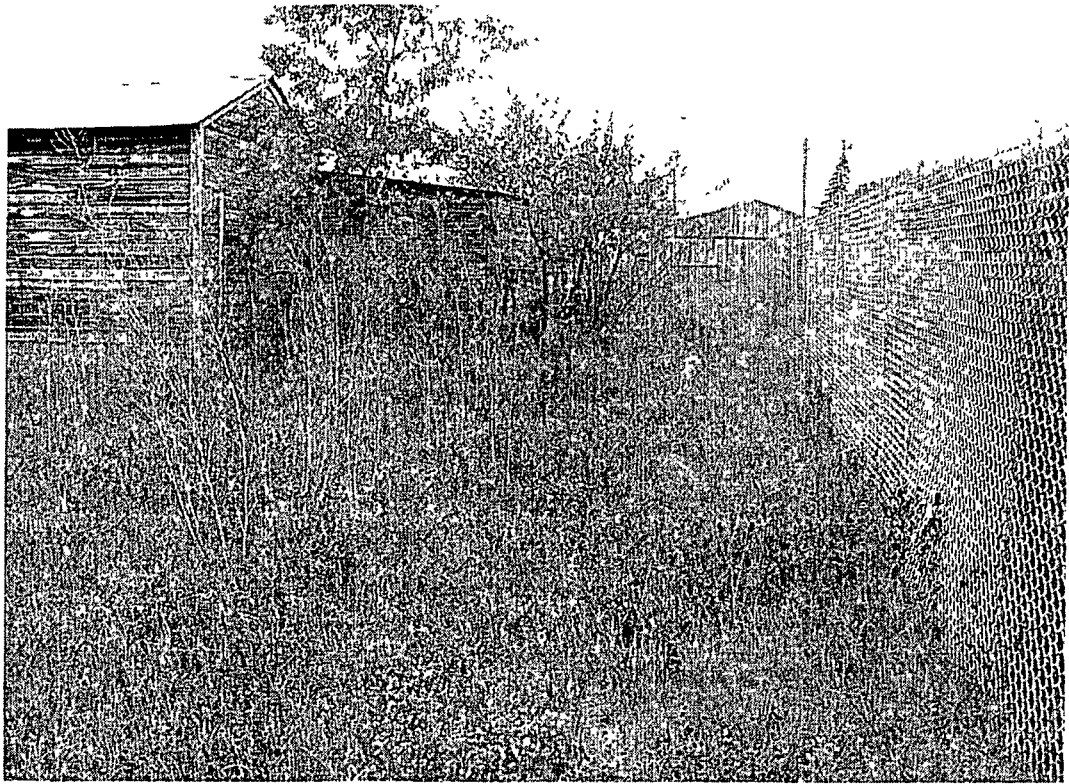
3) View of entrance road from inside gate



4) Identification sign



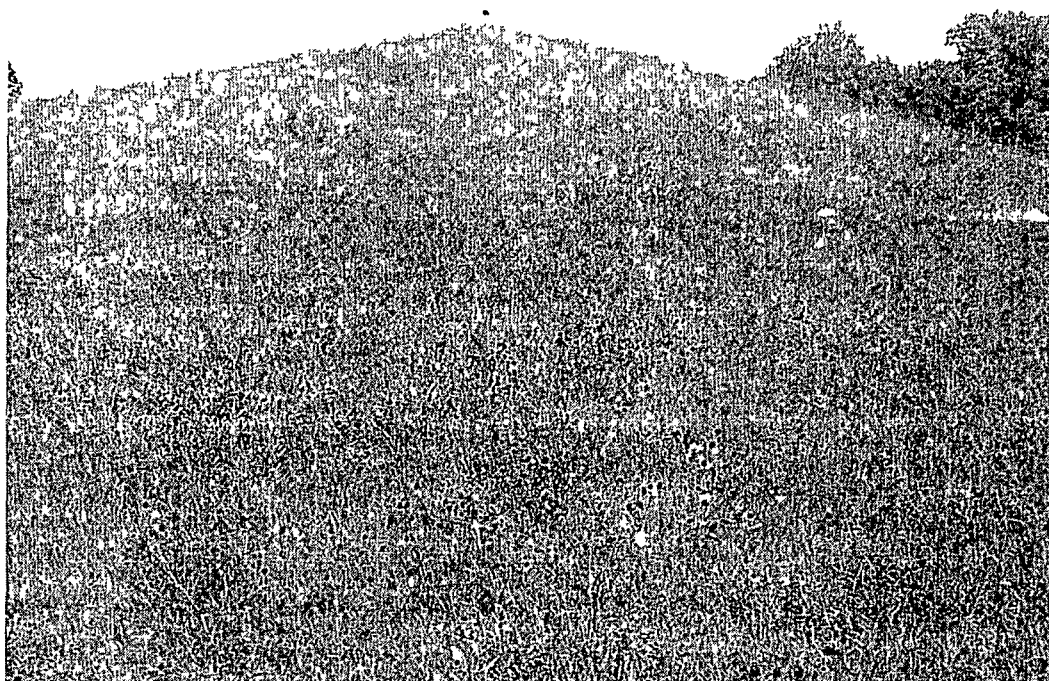
5) View of vegetation growth in former excavation area south of cap.



6) West view outside fencing on south side of cap.



7) West view inside fencing on south side of cap



8) View of top of cap



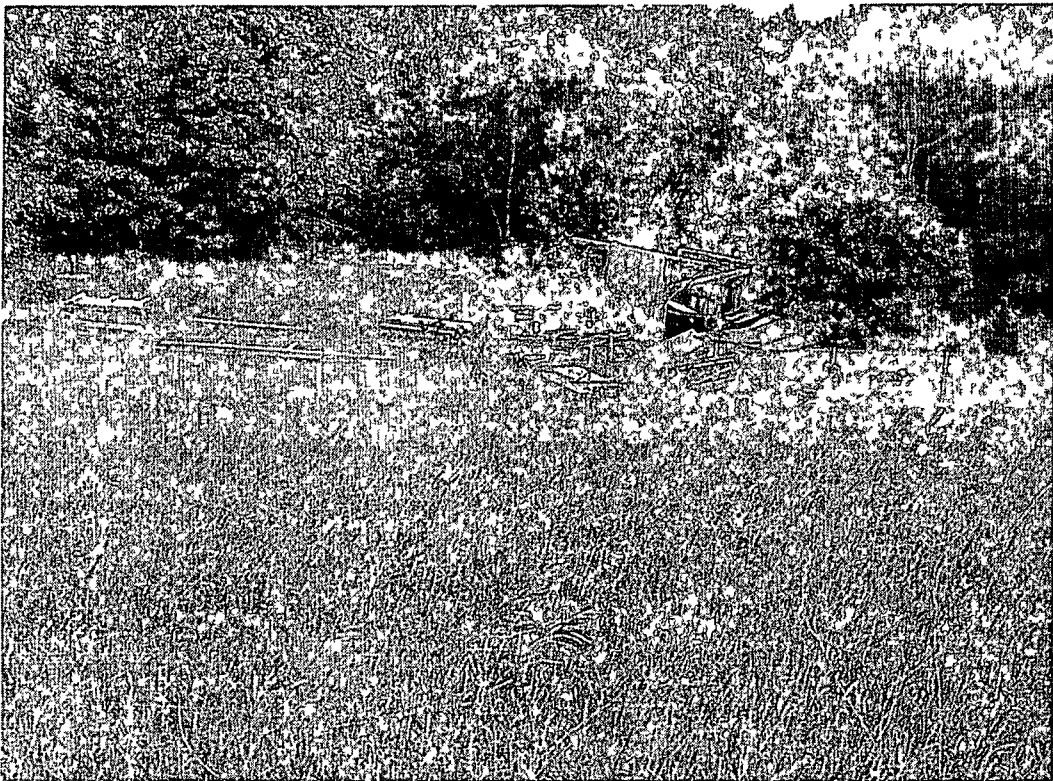
9) View of east side of cap.



10) View of vent at top of cap.



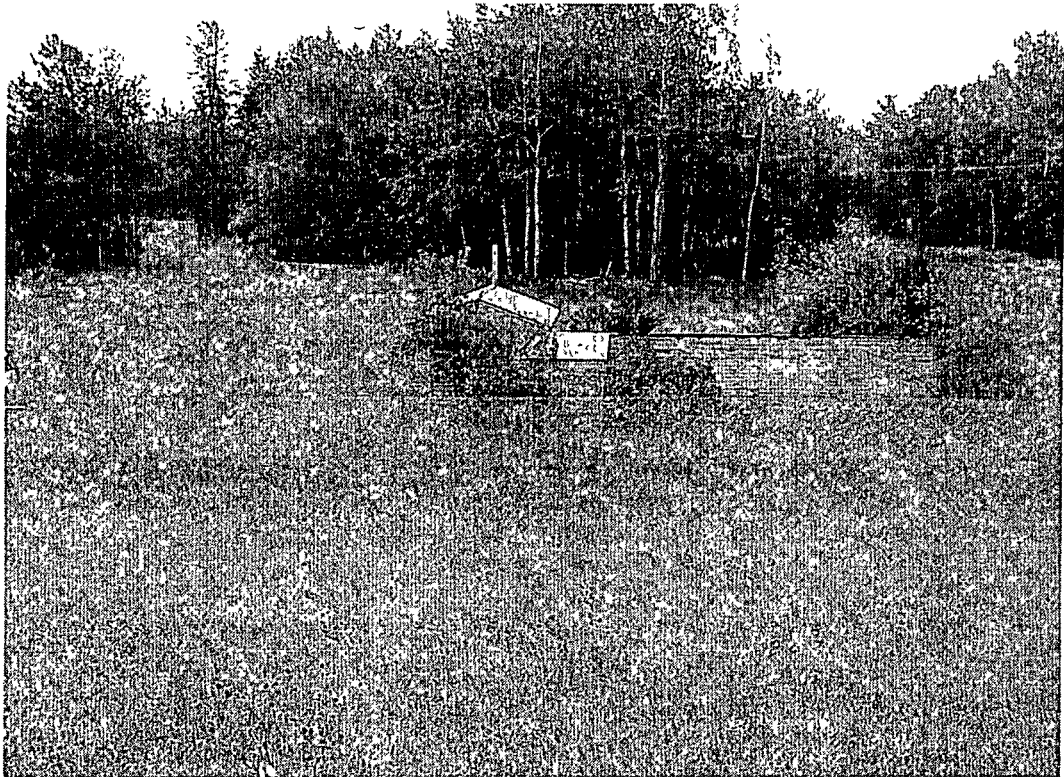
11) Northwest view from top of cap



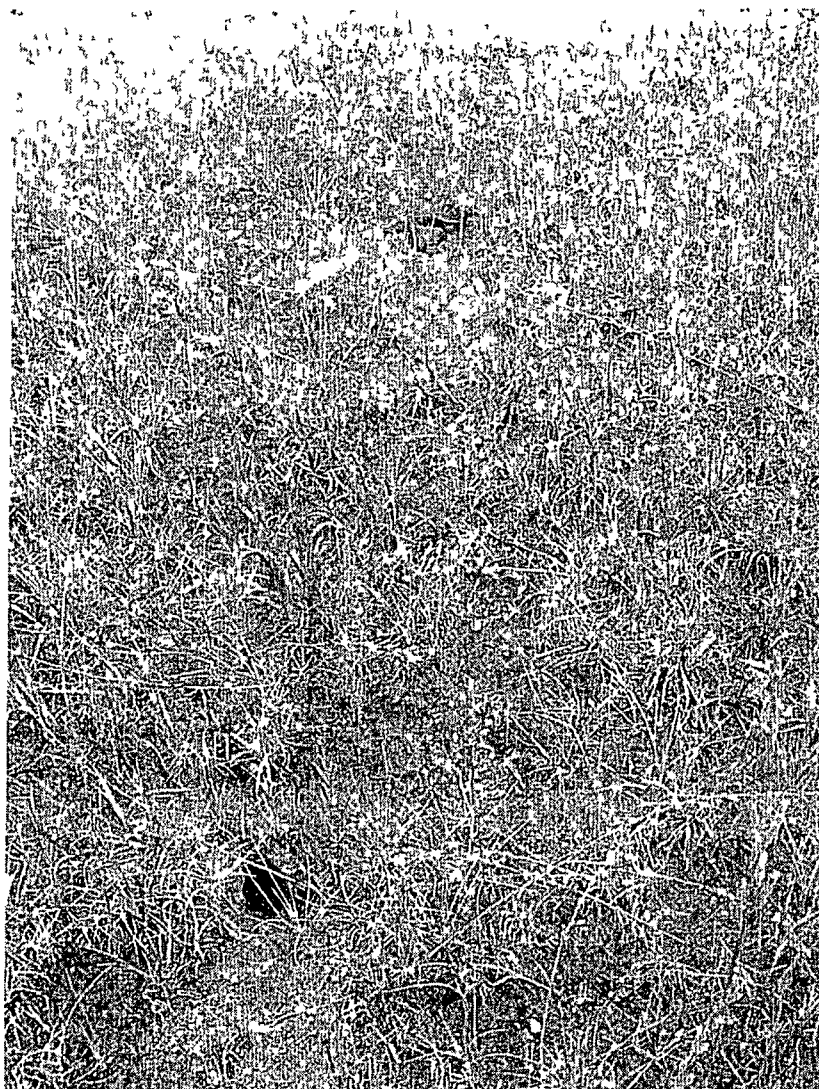
12) North view from top of cap



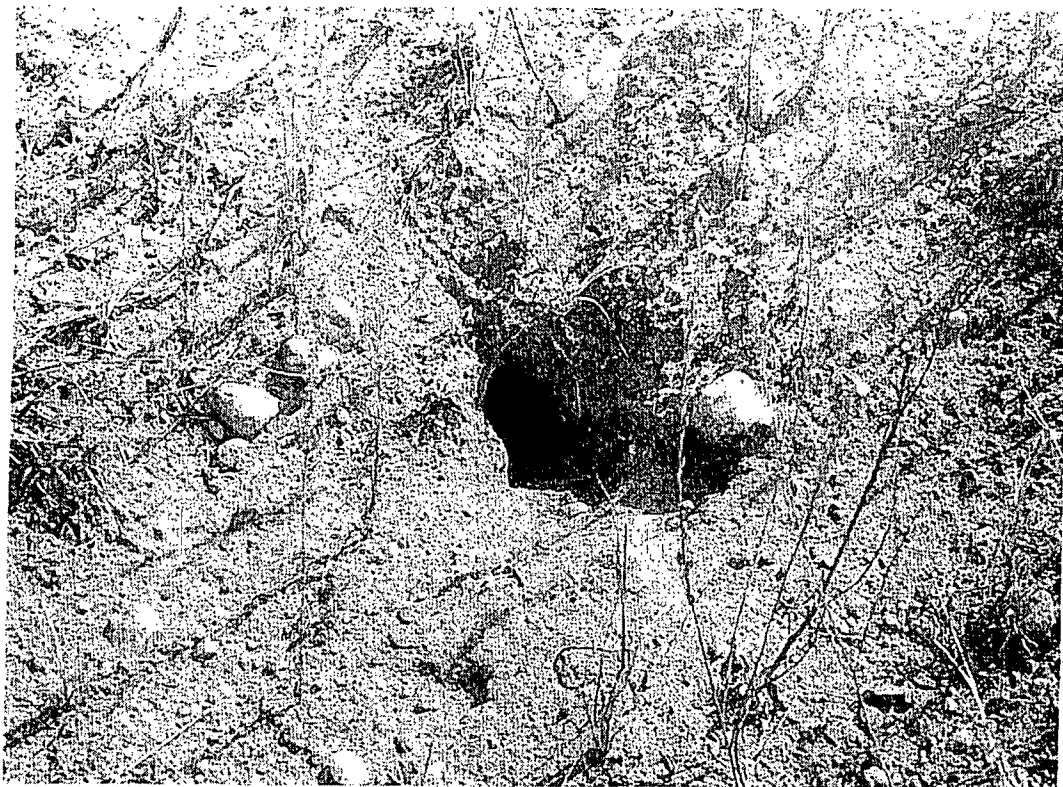
13) Southwest view (from top of cap) of the office building, Pettibone building and Ritari residence.



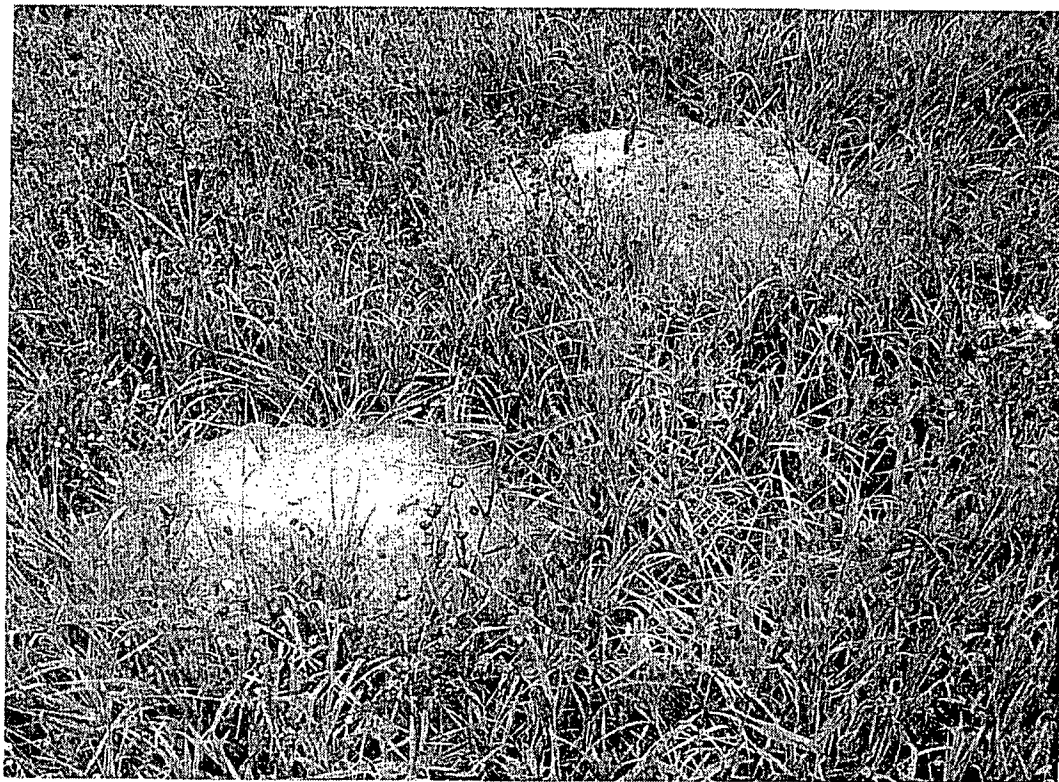
14) South view of entrance road from top of cap.



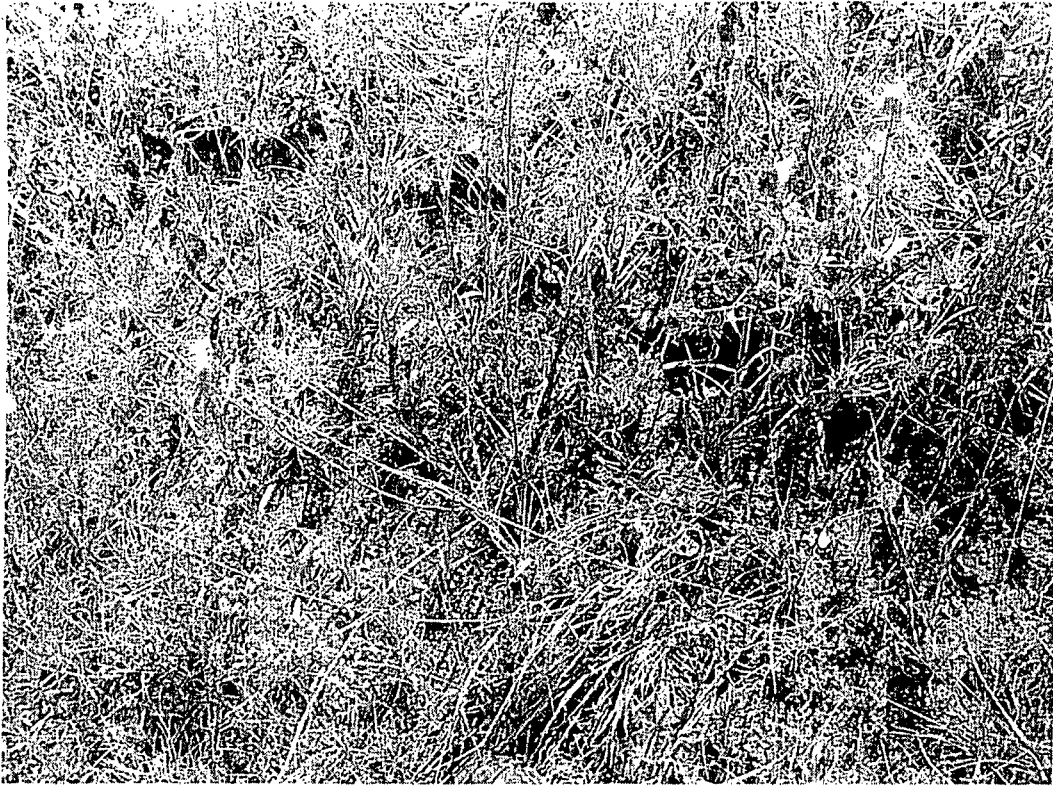
15) Animal holes on surface of cap.



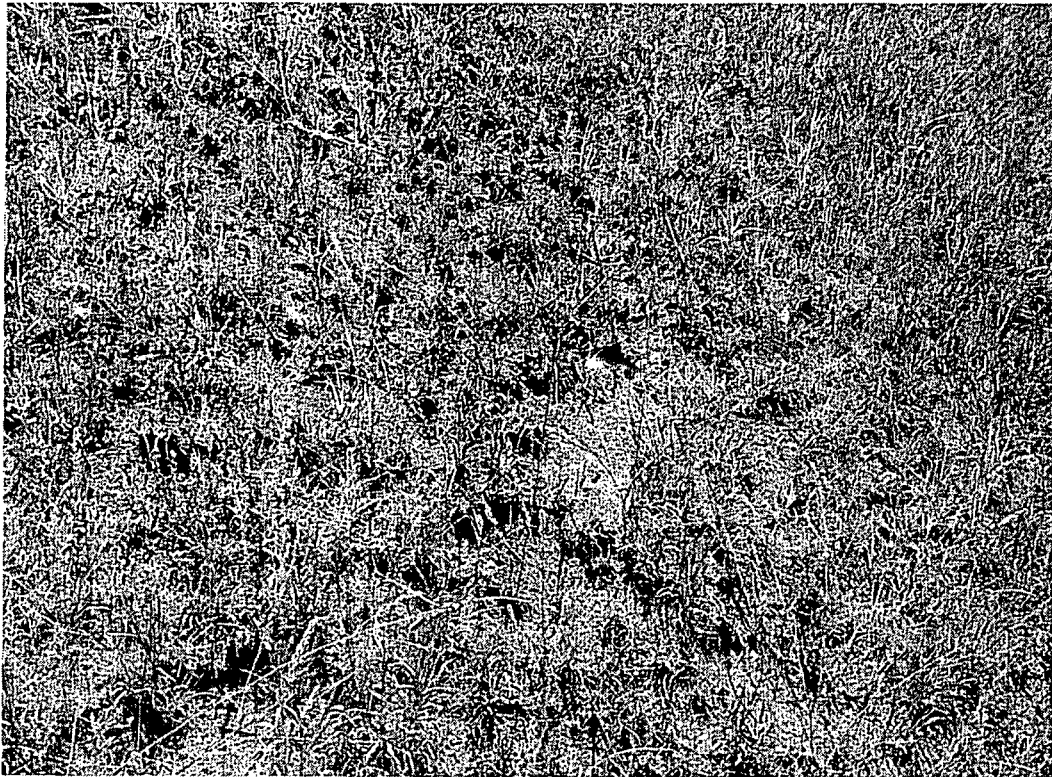
16) Close-up of an animal hole on surface of cap.



17) Gopher mounds on surface of cap.



18) Close-up of a small crack observed on surface of cap.



19) View of sparsely vegetated area on surface of cap.



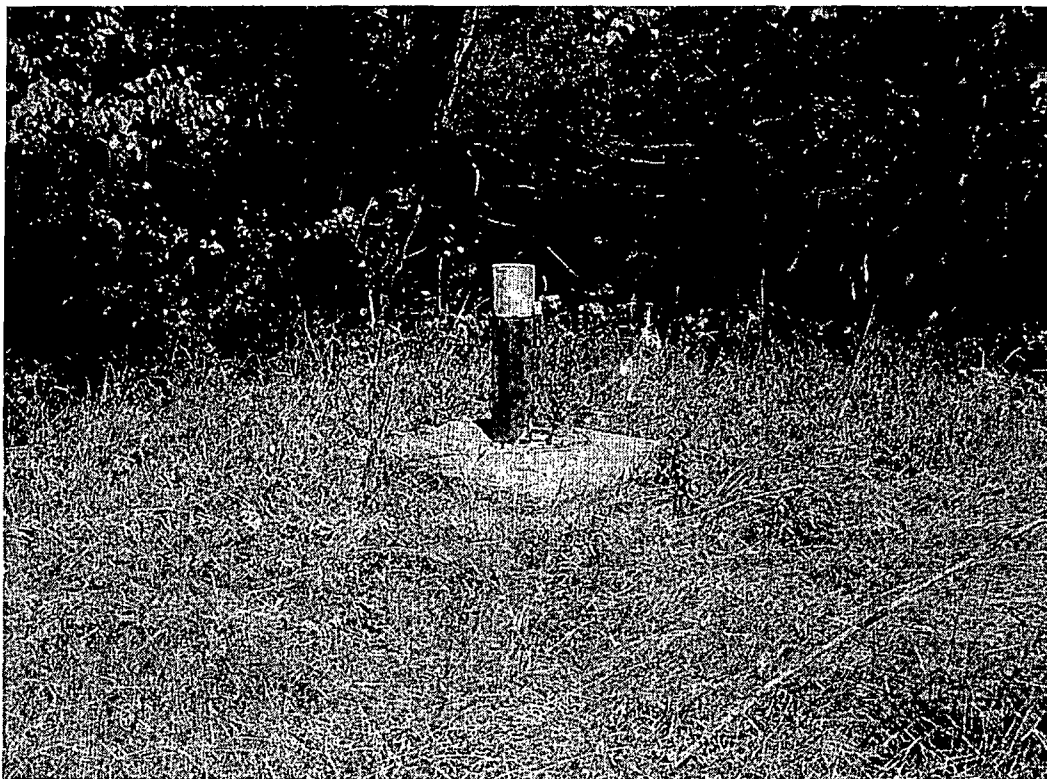
20) View of another sparsely vegetated area on surface of cap



21) Monitoring well MW-16



22) Monitoring well MW-15.



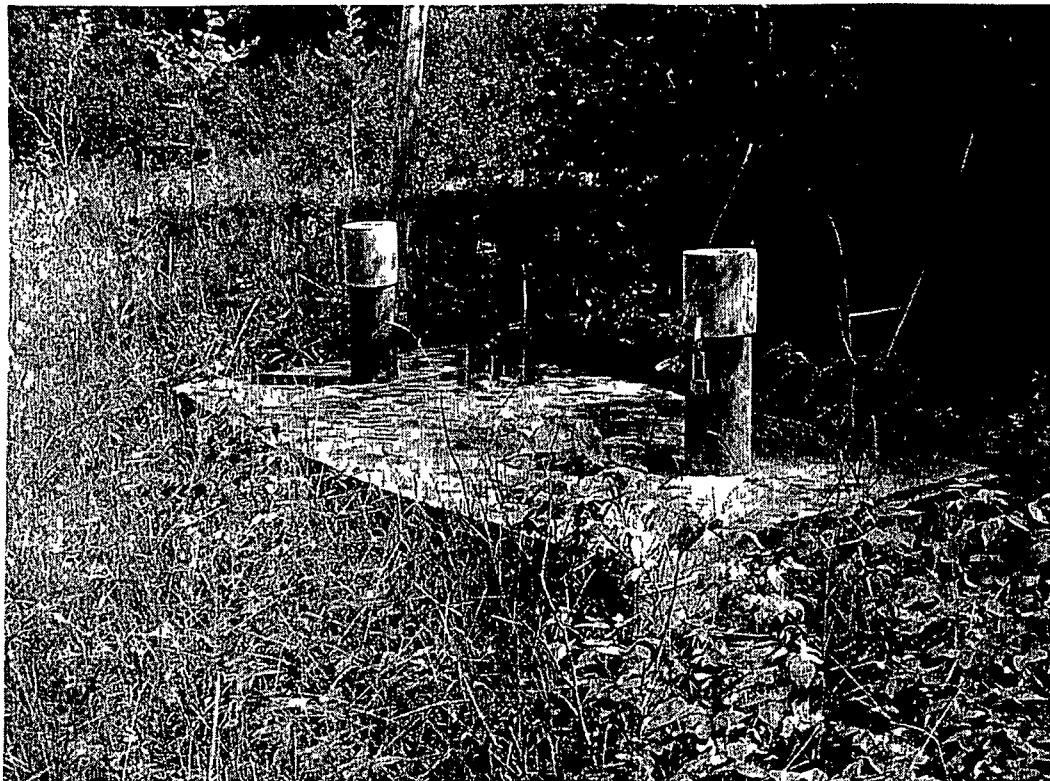
23) Monitoring well MW-12U.



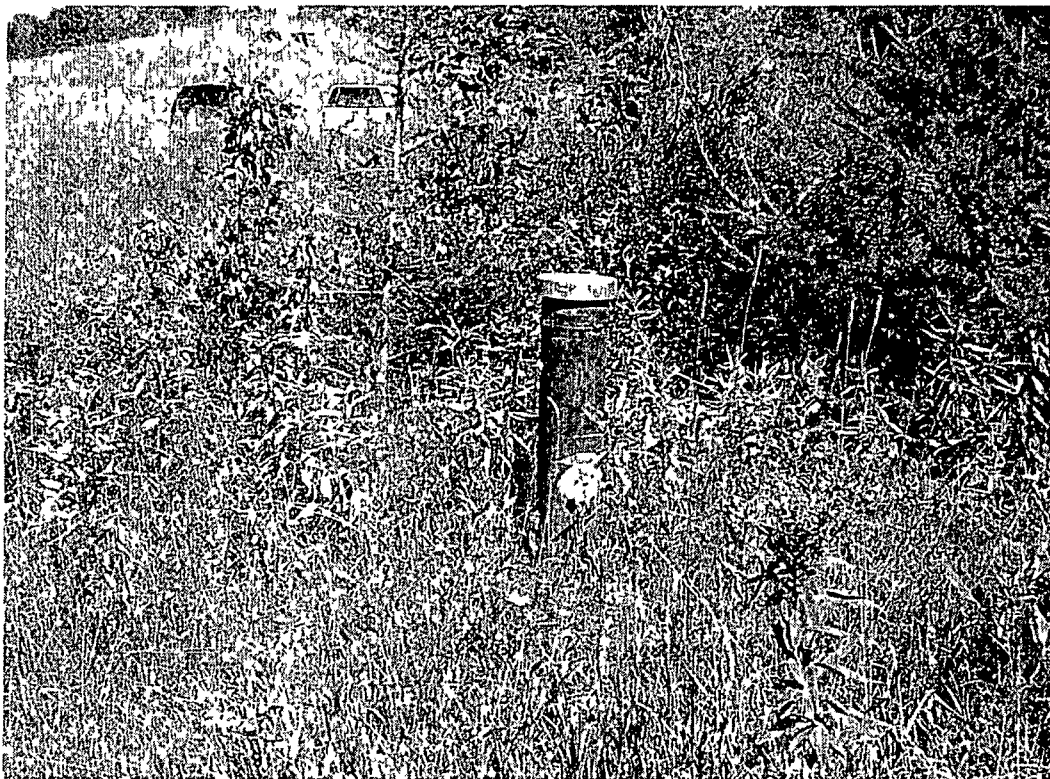
24) Monitoring well MW-10U and MW-10L.



25) Monitoring well MW-17.



26) Monitoring well MW-13L and MW-13U



27) Monitoring well MW-14



28) Monitoring wells MW-11D, MW-11U and MW-11L



29) Monitoring wells MW-14U and MW-14L no longer in use



30) Monitoring well no longer in use- concrete base has heaved significantly above the ground and casing is now unstable